STIC Search Report
EIC 1700

STIC Database Tracking Number: 178837

TO: Ardith Hertzog
Location: REM 9A20
Art Unit : 1754
February 8, 2006

Case Serial Number:

From: Kathleen Fuller
Location: EIC 1700
REMSEN 4B28
Phone: 571/272-2505
Kathleen.Fuller@uspto.gov

Search Notes

Claim 11 but limited by X in claims 12 and 13 because 11 is just too broad.

Access DB# 178837

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: ARDITH E. HERTZOG Examiner #: 71465 Date: 2.7.06
Art Unit: 1754 Phone Number 30 2-1247 Serial Number: PCT-US04-05645
Mail Box and Bldg/Room Location: Rem 9A20 (office) Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need. (doesn't matter)

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Per attached BIB DATA SHEET =>

Inventors (please provide full names): "

Earliest Priority Filing Date: "

***For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.**

786A

Please search for polyoxometalates of the attached cl. ~~11~~ 11 (can narrow to cls. 12-13 if necessary)

Thank you,
Ardith

Searcher: K. Fuller	NA Sequence (#)	STN ✓
Searcher Phone #:	AA Sequence (#)	Dialog
Searcher Location:	Structure (#) 2	Questel/Orbit
Date Searcher Picked Up:	Bibliographic	Dr.Link
Date Completed: 2/8/06	Litigation	Lexis/Nexis
Searcher Prep & Review Time: 40	Fulltext	Sequence Systems
Clerical Prep Time:	Patent Family	WWW/Internet
Online Time: 35	Other	Other (specify)

PTO-1590 (8-01)

Claim 11 - 13

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DICTIONARY FILE UPDATES:   6 FEB 2006  HIGHEST RN 873652-66-5

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*                                                                   *
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FILE LAST UPDATED: 7 Feb 2006  (20060207/ED)

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This file contains CAS Registry Numbers for easy and accurate substance identification.

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                  OR 134360-58-0/BI OR 13770-18-8/BI OR 3251-23-8/BI OR
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L6         10926 SEA FILE=REGISTRY ABB=ON  L5 AND 25-80/O
L7          9409 SEA FILE=REGISTRY ABB=ON  L6 NOT X/ELS
L11            6 SEA FILE=REGISTRY ABB=ON  L2 AND NITRATE
L18        16041 SEA FILE=HCAPLUS ABB=ON  L11
L21        17241 SEA FILE=HCAPLUS ABB=ON  L7
L22         3514 SEA FILE=HCAPLUS ABB=ON  L21(L)CAT/RL
L23          113 SEA FILE=HCAPLUS ABB=ON  L22(L)?OXOMETAL?
L24            4 SEA FILE=HCAPLUS ABB=ON  L23 AND COMPOSITION?
L25           13 SEA FILE=HCAPLUS ABB=ON  L23 AND (L18 OR NITRATE?)
L26          708 SEA FILE=HCAPLUS ABB=ON  L22(L)HETEROPOLY?
L27           38 SEA FILE=HCAPLUS ABB=ON  L26 AND COMPOSITION?
L28           19 SEA FILE=HCAPLUS ABB=ON  L26 AND (L18 OR NITRATE?)
L29            8 SEA FILE=HCAPLUS ABB=ON  (L23 OR L28) AND (POLLUTION? OR
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L30           77 SEA FILE=HCAPLUS ABB=ON  L24 OR L25 OR (L27 OR L28 OR L29)
L32           70 SEA FILE=HCAPLUS ABB=ON  L30 AND (1840-2004)/PY,AY,PRY
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Claim 11 limited by 12+13
9,409 compounds

70 CA references

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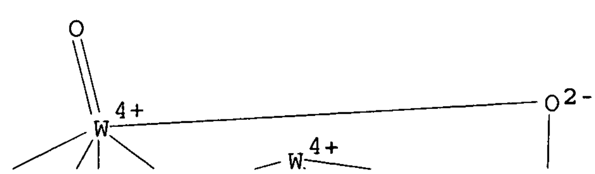
=> d l32 bib abs hitind hitstr 1-70

L32  ANSWER 1 OF 70  HCAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:1299152  HCAPLUS
TI   Preparation and application of dealuminated ultra-stable Y
     zeolite-supported heteropolyacid salt catalysts
IN   Wang, Jun; Zhang, Fumin
PA   Nanjing University of Technology, Peop. Rep. China
SO   Faming Zhuanli Shenqing Gongkai Shuomingshu, 14 pp.
     CODEN: CNXXEV
DT   Patent
LA   Chinese
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
     ---------------     ----   --------   --------------------   --------
PI   CN 1583253           A     20050223   CN 2004-10044811       20040604 <--
PRAI CN 2004-10044811           20040604  <--
AB   The title catalysts are prepared by: (1) mixing ultra-stable Y (USY)
     zeolites with deionized water at the weight ratio of 1 : 0.8-5, treating by
     self-steaming at 500-900ÅC for 2-10 h, filter-washing with a 1-5 mol/L
     acid solution at 60-100ÅC for 1-10 h, filtering, drying, and calcining to
     obtain the dealuminated ultra-stable Y zeolites as the catalyst supports,
     and (2) immersing the supports in a water solution of alkali-metal carbonate
```

or **nitrate**, drying, calcining, immersing in an appropriate amount of heteropolyacid solution, drying, and calcining to obtain the final catalysts. The obtained catalysts can be used in the liquid-phase esterification between acetic acid and n-butanol with the advantages of low reaction temperature and high conversion rate.

IC ICM B01J023-16
ICS B01J027-188; B01J029-08
CC 67 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
IT INDEXING IN PROGRESS
IT **12026-91-4P**
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation and application of dealuminated ultra-stable Y zeolite-supported **heteropolyacid** salt catalysts)
IT 584-08-7, Potassium carbonate 1343-93-7, dodeca-tungstophosphoric acid (H3PW12O40•20H2O) 6484-52-2, Ammonium **nitrate**
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation and application of dealuminated ultra-stable Y zeolite-supported heteropolyacid salt catalysts)
IT **12026-91-4P**
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation and application of dealuminated ultra-stable Y zeolite-supported **heteropolyacid** salt catalysts)
RN 12026-91-4 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, tricesium
(9CI) (CA INDEX NAME)

PAGE 1-A



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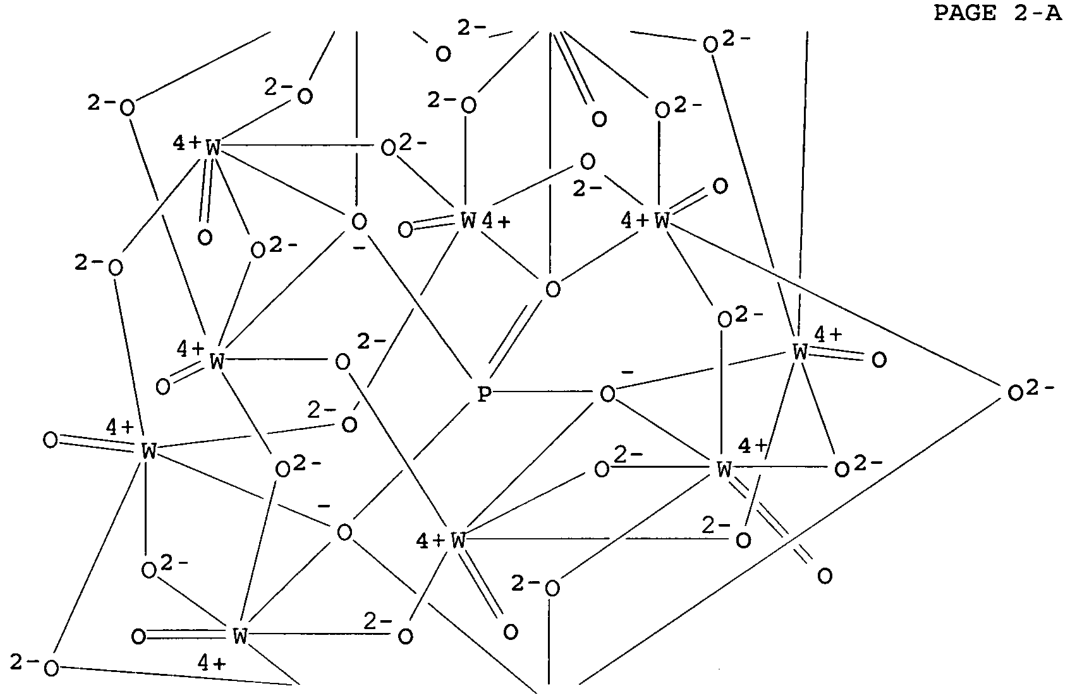

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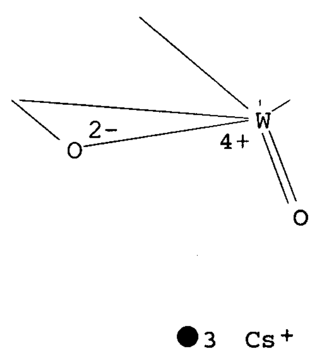


L32 ANSWER 2 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:559343 HCAPLUS
DN 143:153081
TI Hydrolysis method of esters
IN Chen, Haibo
PA China Petroleum & Chemical Corporation, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, No pp. given
CODEN: CNXXEV
DT Patent
LA Chinese
FAN.CNT 1

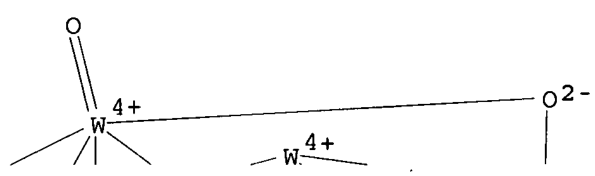
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1541991	A	20041103	CN 2003-122853	20030429 <--

PRAI CN 2003-122853 20030429 <--
OS CASREACT 143:153081

AB The ester hydrolyzing method includes hydrolyzing ester in water to produce C1-C10 fatty acid or aromatic acid and C1-C4 fatty alc. under the presence of ammonium salt of heteropoly acid as catalyst. The ammonium salt of heteropoly acid is obtained through the reaction between heteropoly acid in Keggin structure and inorg. ammonium salt or organic amine, the heteropoly acid is selected from phosphotungstic acid, silicotungstic acid, silicomolybdic acid and phosphomolybdic acid; the inorg. ammonium salt is selected from ammonium carbonate, ammonium **nitrate**, ammonium sulfate, ammonium phosphate and diammonium hydrochloride; and the organic amine is selected from fatty amine, alicyclic amine and arylamine. The said ester hydrolyzing method can obtain high conversion rate in relatively lower water/ester ratio and relatively short time, and the catalyst is cheap and easy to sep. from the product.

IC ICM C07C027-02
CC 23-16 (Aliphatic Compounds)
Section cross-reference(s): 25
IT 74-89-5D, Methylamine, reaction product with heteropoly acid 107-15-3D, Ethylenediamine, reaction product with heteropoly acid 111-86-4D, n-Octylamine, reaction product with heteropoly acid 506-87-6D, Ammonium carbonate, reaction product with heteropoly acid **1343-93-7D**, 12-Phosphotungstic acid, reaction product with amine 6484-52-2D, Ammonium **nitrate**, reaction product with heteropoly acid 7783-20-2D, Ammonium sulfate, reaction product with heteropoly acid **12026-57-2D**, 12-Molybdophosphoric acid, reaction product with amine **12027-38-2D**, reaction product with ammonium **nitrate**
RL: **CAT (Catalyst use)**; USES (Uses)
(hydrolysis of esters with **heteropoly** acid salt catalyst)
IT **1343-93-7D**, 12-Phosphotungstic acid, reaction product with amine **12026-57-2D**, 12-Molybdophosphoric acid, reaction product with amine **12027-38-2D**, reaction product with ammonium **nitrate**
RL: **CAT (Catalyst use)**; USES (Uses)
(hydrolysis of esters with **heteropoly** acid salt catalyst)
RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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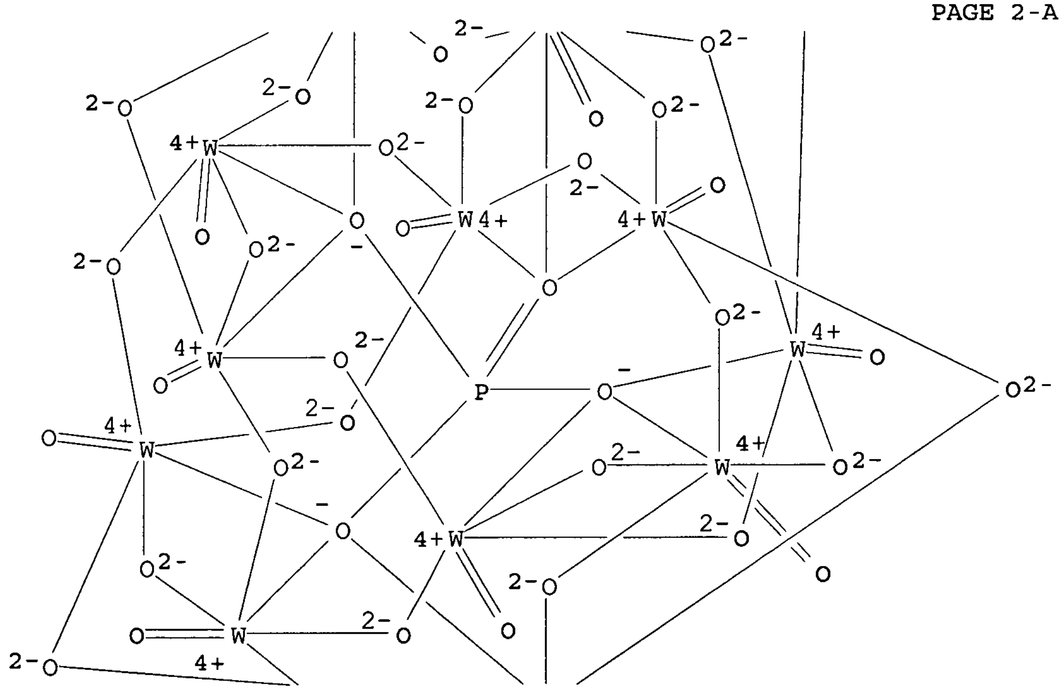

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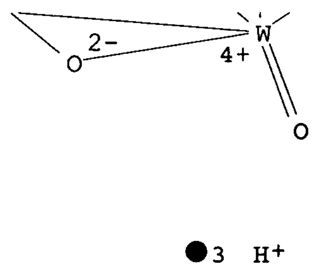

RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

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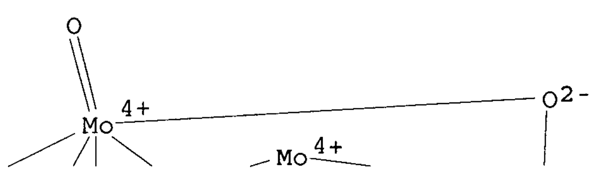

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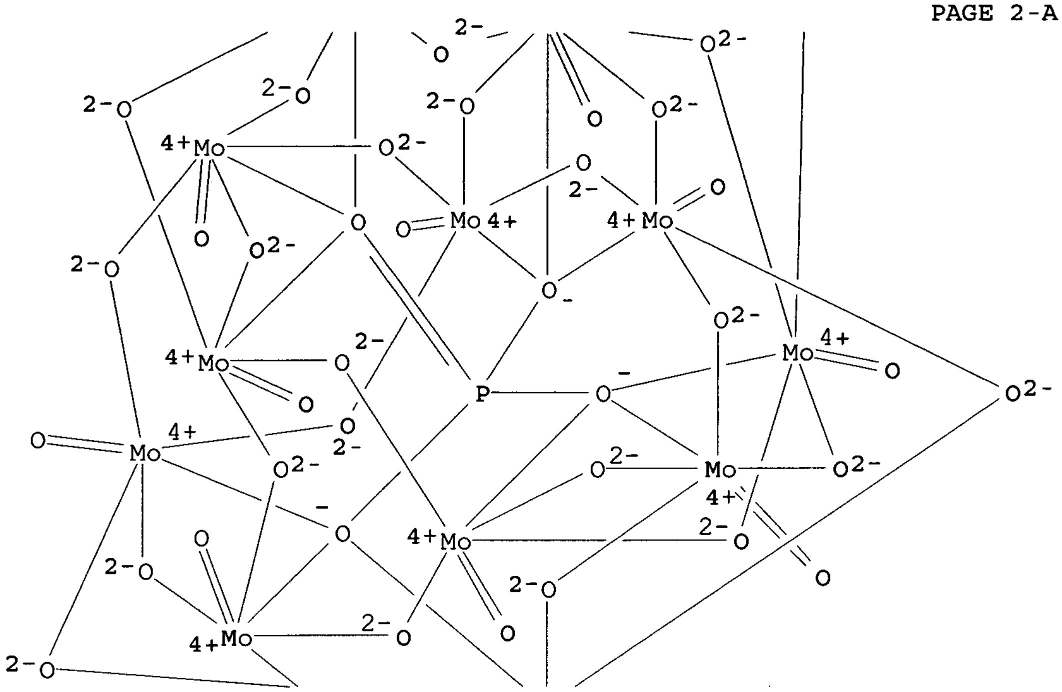

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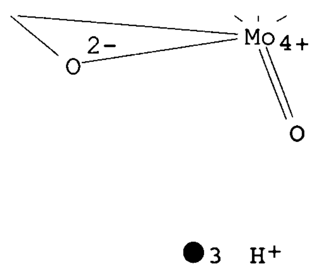
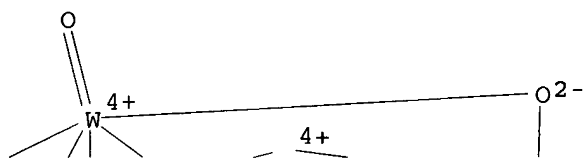


RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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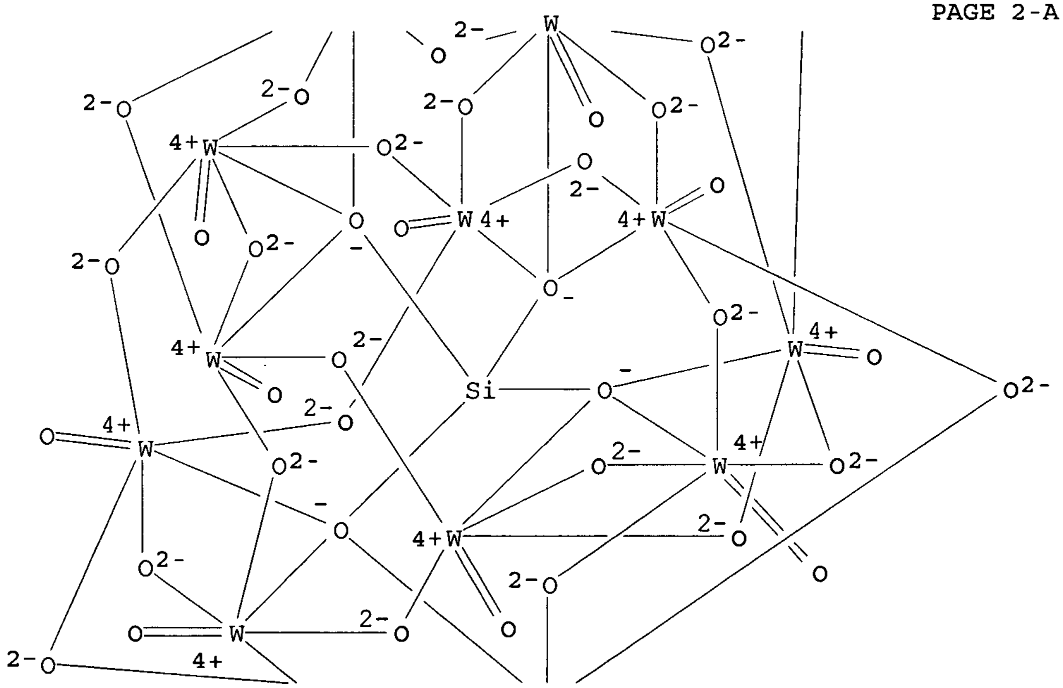

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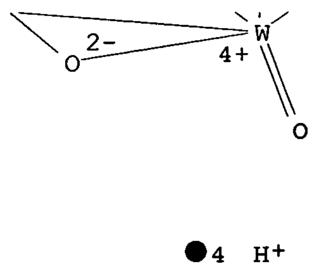


L32 ANSWER 3 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:522436 HCAPLUS
DN 143:61609
TI Bleaching method using metal disubstituted defect polyoxometalate
IN Hayakawa, Shoichi; Kawabata, Yasunari; Okazaki, Tadashi; Hamaguchi, Takayoshi; Miyazaki, Tadashi
PA Mitsubishi Gas Chemical Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

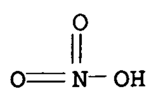
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005154937	A2	20050616	JP 2003-394095	20031125 <--
PRAI	JP 2003-394095		20031125 <--		

AB Chemical pulp for paper making is bleached using a metal disubstituted defect hetero polyoxometalate, [SiM2W10O40]q-, wherein M = transition metal atom, q = integer, and oxidants, such as H2O2, peracetic acid, O2, sodium percarbonate, sodium borate. Thus, chemical pulp was bleached by H2O2 in the presence of Fe-substituted γ-cesium tungstosilicate.
IC ICM D21C009-16
ICS D06L003-02; D21C009-10
CC 43-6 (Cellulose, Lignin, Paper, and Other Wood Products)
IT 638-38-0DP, Manganese acetate, reaction products with Keggin-type potassium tungstosilicate, cesium **nitrate**, and potassium permanganate 7722-64-7DP, Potassium permanganate, reaction products with Keggin-type potassium tungstosilicate, cesium **nitrate**, and manganese acetate 7789-18-6DP, Cesium **nitrate**, reaction products with Keggin-type potassium tungstosilicate and others
10099-59-9DP, Lanthanum **nitrate**, reaction products with Keggin-type potassium tungstosilicate and cesium **nitrate**
10421-48-4DP, Iron trinitrate, reaction products with Keggin-type potassium tungstosilicate and cesium **nitrate**
102073-48-3DP, reaction products with iron trinitrate/manganese acetate/lanthanum **nitrate** and others
RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(bleaching method using metal disubstituted defect **polyoxometalate**)
IT **10421-48-4DP**, Iron trinitrate, reaction products with Keggin-type potassium tungstosilicate and cesium **nitrate**
102073-48-3DP, reaction products with iron trinitrate/manganese acetate/lanthanum **nitrate** and others
RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(bleaching method using metal disubstituted defect **polyoxometalate**)

RN 10421-48-4 HCAPLUS

CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)



●1/3 Fe(III)

RN 102073-48-3 HCAPLUS

CN Tungstate(8-), [μ10-[orthosilicato(4-)-κO:κO:κO:.kapp a.O':κO':κO':κO'':κO'':κO''':κO''']]oc tadeca-μ-oxotetradecaoxodeca-, octapotassium (9CI) (CA INDEX NAME)

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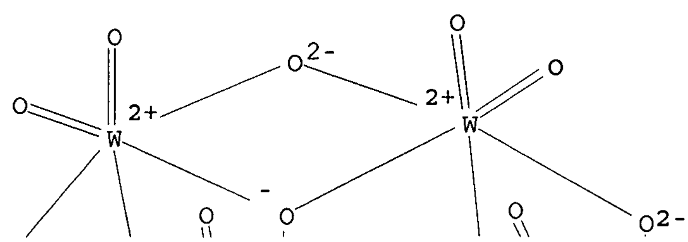

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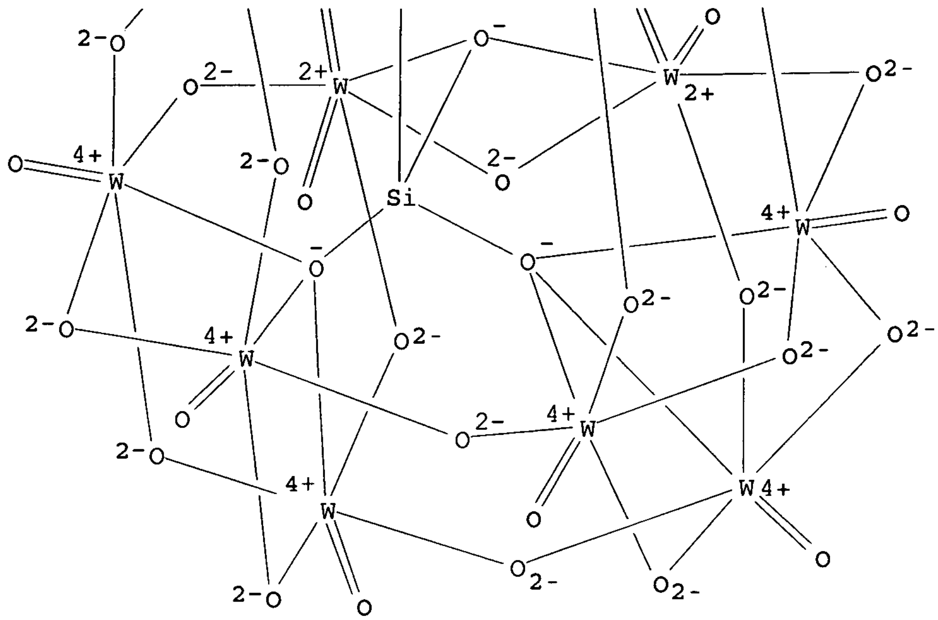

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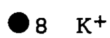


L32 ANSWER 4 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:9522 HCAPLUS
DN 142:93424
TI Element-substituted heteropolyoxometallates, their preparation, and uses as oxidation catalysts
IN Yonehara, Hiroshi; Sumida, Yasutaka
PA Nippon Shokubai Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005002027	A2	20050106	JP 2003-165939	20030611 <--
PRAI	JP 2003-165939		20030611 <--		

OS CASREACT 142:93424
AB The compds. comprise (A) heteropolyoxometallate anions having two-defect structures containing Si or P as heteroatoms and polyatoms chosen from Mo, W, V, and Nb and (B) 2 other elements incorporated in the defects. K8[γ-SiW10O36].12H2O was treated with Na2MoO4.2H2O, Fe(NO3)3.9H2O, and Bu4NBr (TBABr) at pH 5 to give (TBA)xHy[γ-SiFe0.93(OH2)0.93Mo0.7W10O38.7] (x, y = 0-6), which was used in oxidation of cyclohexane to give 0.5% cyclohexanol and 0.4% cyclohexanone.
IC ICM C07C211-63
ICS B01J031-34; B01J031-36; C07B061-00; C07C029-50; C07C035-08; C07C045-33; C07C049-403; C07D301-06; C07D303-04

CC 24-5 (Alicyclic Compounds)
Section cross-reference(s): 78

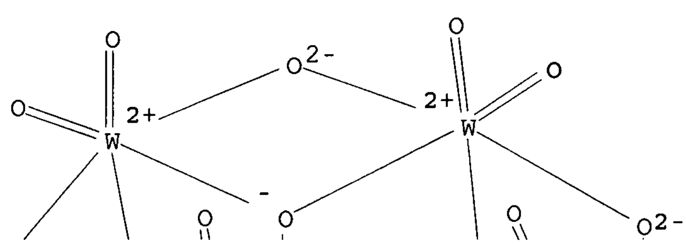
IT **102073-48-3DP**, reaction products with ferric **nitrate**, sodium vanadate, tetrabutylammonium bromide, and titanium oxide sulfate
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation of element-substituted **heteropolyoxometallates** as oxidation catalysts)

IT **102073-48-3DP**, reaction products with ferric **nitrate**, sodium vanadate, tetrabutylammonium bromide, and titanium oxide sulfate
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation of element-substituted **heteropolyoxometallates** as oxidation catalysts)

RN 102073-48-3 HCAPLUS

CN Tungstate(8-), [μ10-[orthosilicato(4-)-κO:κO:κO:.kapp a.O':κO':κO':κO'':κO'':κO''':κO''']]oc tadeca-μ-oxotetradecaoxodeca-, octapotassium (9CI) (CA INDEX NAME)

PAGE 1-A



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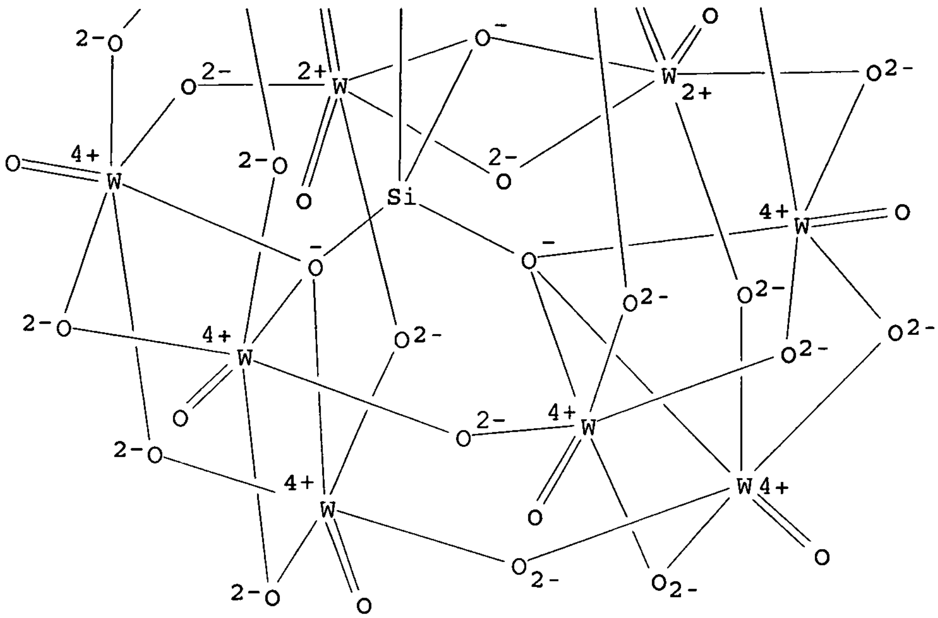

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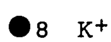


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L32  ANSWER 5 OF 70  HCAPLUS  COPYRIGHT 2006 ACS on STN
AN   2004:999712  HCAPLUS
DN   141:427184
TI   Compositions, materials incorporating the compositions
     , and methods of using the compositions and materials
IN   Okun, Nelya; Hill, Craig L.
PA   USA
SO   U.S. Pat. Appl. Publ., 8 pp.
     CODEN: USXXCO
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
     ---------------     ----   --------   --------------------   --------
PI   US 2004230086        A1    20041118   US 2004-786671         20040225 <--
     WO 2005021435        A2    20050310   WO 2004-US5645         20040225 <--
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
             LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
             NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,
             TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
             BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE,
             ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK,
             TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
PRAI US 2003-449892P      P     20030225  <--
```

application

US 2004-786671 A 20040225 <--

AB Compns. that can protect and/or remove contaminants such as warfare agents from the environment in which people are operating are disclosed, as are materials incorporating the compns., and methods of use thereof. In one embodiment, the **composition** includes a metal **nitrate** selected from d-block metal **nitrates** and f-block metal **nitrates** and a metal salt having weakly bound counter anions. The metal of the metal salt having weakly bound counter anions is selected from a d-block metal and an f-block metal. Another embodiment of the **composition** includes a first polyoxometalate having a first metal selected from a d-block metal and an f-block metal and a second polyoxometalate having a second metal selected from a d-block metal and an f-block metal, the first metal being an open coordinate site of the first polyoxometalate. In addition, the first metal has a **nitrate** terminal ligand.

IC ICM A62D003-00
ICS C11D001-00

INCL 588205000

CC 59-2 (Air **Pollution** and Industrial Hygiene)
Section cross-reference(s): **4**

ST polyoxymetalate **nitrate** copper catalytic oxidn warfare agent

IT 7440-33-7D, Tungsten, heteropoly compds. containing, complexes with iron 59858-44-5 **134360-58-0 795308-36-0 796042-78-9**
RL: **CAT (Catalyst use)**; USES (Uses)
(as **polyoxometalate**; catalytic compns. for removal of contaminants such as warfare agents, and materials incorporating these compns.)

IT **3251-23-8**, Copper (II) **nitrate** 7439-89-6D, Iron, complexes with heteropolytungstates 7440-22-4D, Silver, complexes with heteropolytungstates 7440-45-1D, Cerium, complexes with heteropolytungstates **10108-73-3**, Cerium (III) **nitrate** **10141-05-6**, Cobalt (II) **nitrate** **10421-48-4**, Iron (III) **nitrate** **13093-17-9** **13138-45-9**, Nickel (II) **nitrate** 13770-18-8, Copper (II) perchlorate 34946-82-2, Copper (II) trifluoromethanesulfonate 38465-60-0, Copper (II) tetrafluoroborate
RL: CAT (Catalyst use); USES (Uses)
(catalytic compns. for removal of contaminants such as warfare agents, and materials incorporating these compns.)

IT **134360-58-0 795308-36-0 796042-78-9**
RL: **CAT (Catalyst use)**; USES (Uses)
(as **polyoxometalate**; catalytic compns. for removal of contaminants such as warfare agents, and materials incorporating these compns.)

RN 134360-58-0 HCAPLUS

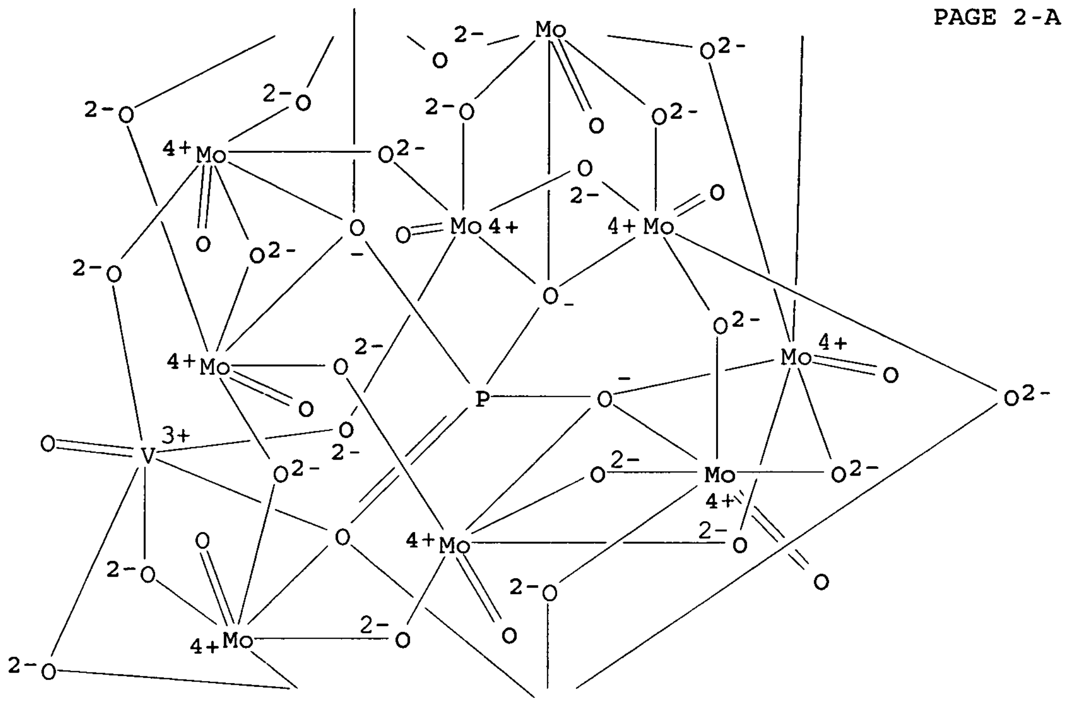
CN 1-Butanaminium, N,N,N-tributyl-, (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]divanadate(5-) (5:1) (9CI) (CA INDEX NAME)

CM 1

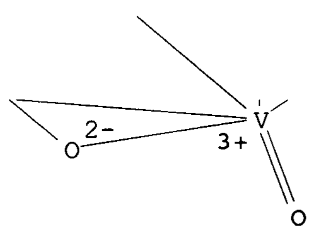
CRN 58071-93-5
CMF Mo10 O40 P V2
CCI CCS

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



PAGE 3-A



CM 2

CRN 10549-76-5
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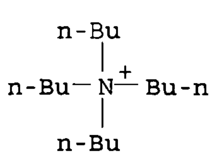


RN 795308-36-0 HCAPLUS
CN 1-Butanaminium, N,N,N-tributyl-, heneicosa-μ-oxononaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':.kappa.O'':κO'':κO'':κO''':κO''':κO''']](tri-

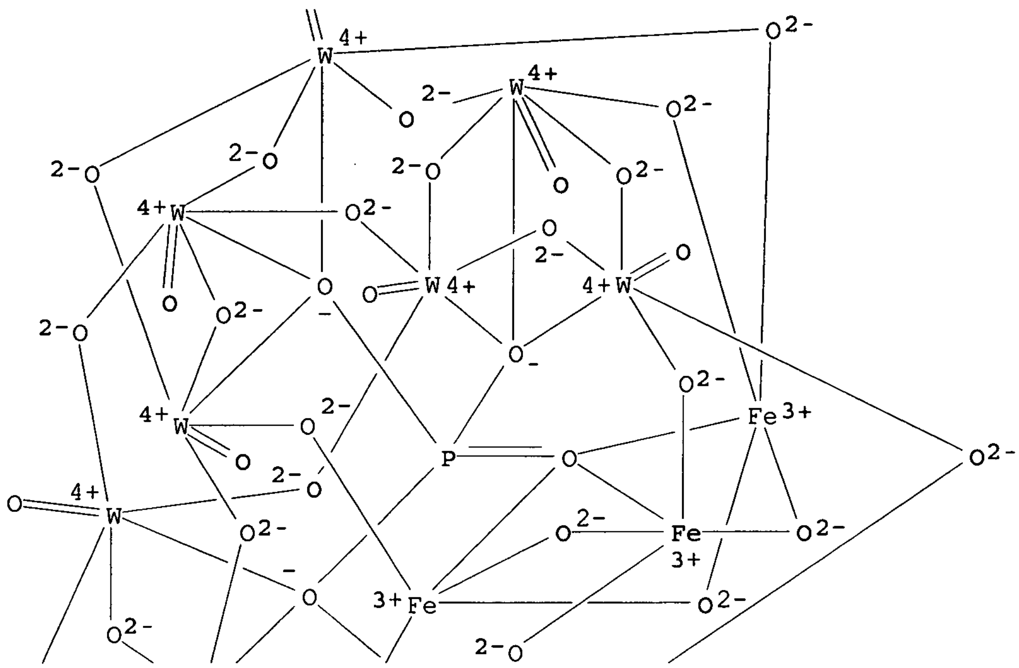
μ-oxotriferrate)nonatungstate(6-) (6:1) (9CI) (CA INDEX NAME)

CM 1

CRN 741643-46-9
CMF Fe3 O37 P W9
CCI CCS

PAGE 1-A

PAGE 2-A



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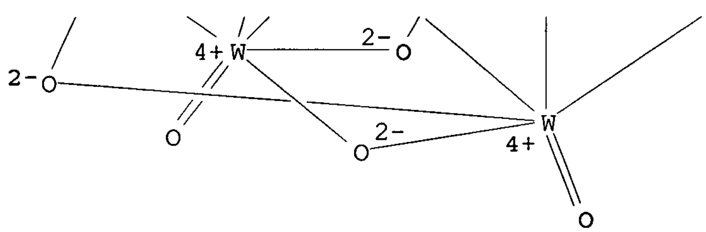

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CRN 10549-76-5
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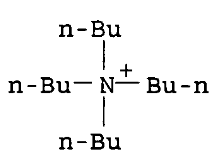


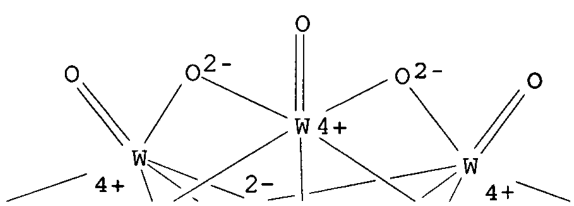
RN 796042-78-9 HCAPLUS
CN 1-Butanaminium, N,N,N-tributyl-, triferratedotetraconta-μ-oxooctadecaoxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':κO'':κO''':κO''']]octadecatungsta

te(9-) (9:1) (9CI) (CA INDEX NAME)

CM 1

CRN 796042-77-8
CMF Fe3 O68 P2 W18
CCI CCS

PAGE 1-A



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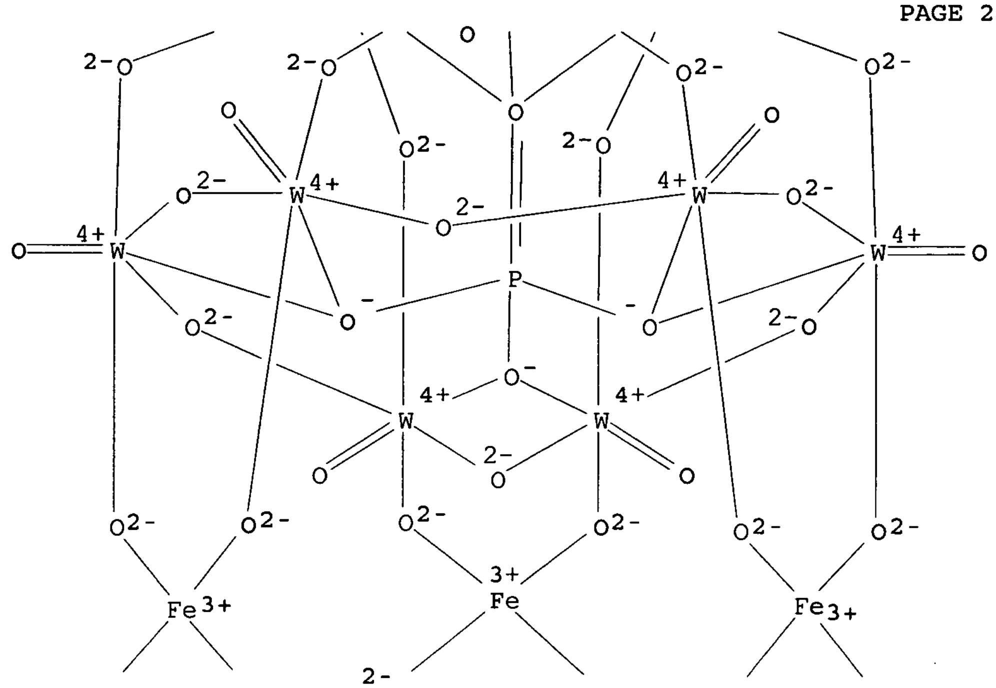

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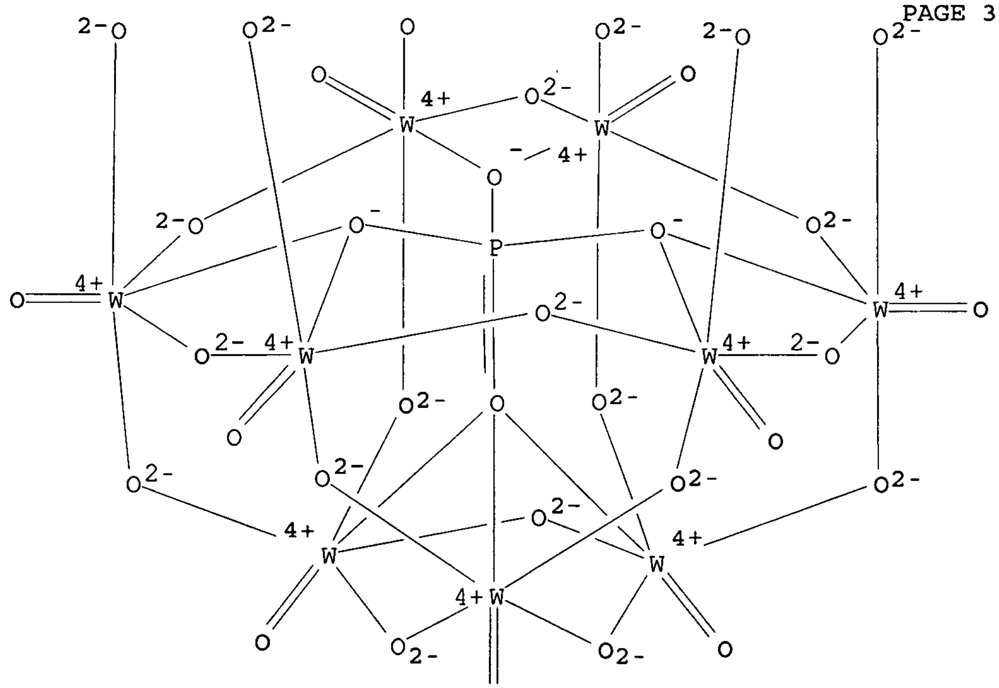
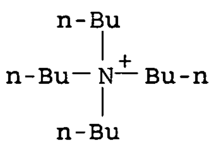


PAGE 4-A

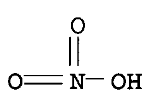
O

CM 2

CRN 10549-76-5
CMF C16 H36 N

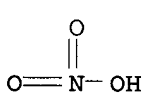


IT **3251-23-8**, Copper (II) **nitrate 10108-73-3**, Cerium (III) **nitrate 10141-05-6**, Cobalt (II) **nitrate 10421-48-4**, Iron (III) **nitrate 13093-17-9 13138-45-9**, Nickel (II) **nitrate**
RL: CAT (Catalyst use); USES (Uses)
(catalytic compns. for removal of contaminants such as warfare agents, and materials incorporating these compns.)
RN 3251-23-8 HCAPLUS
CN Nitric acid, copper(2+) salt (8CI, 9CI) (CA INDEX NAME)



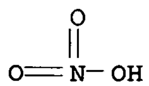
● 1/2 Cu(II)

RN 10108-73-3 HCAPLUS
CN Nitric acid, cerium(3+) salt (8CI, 9CI) (CA INDEX NAME)



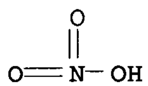
● 1/3 Ce(III)

RN 10141-05-6 HCAPLUS
CN Nitric acid, cobalt(2+) salt (8CI, 9CI) (CA INDEX NAME)



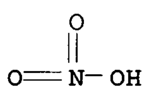
● 1/2 Co(II)

RN 10421-48-4 HCAPLUS
CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)



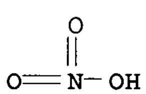
● 1/3 Fe(III)

RN 13093-17-9 HCAPLUS
CN Nitric acid, cerium(4+) salt (8CI, 9CI) (CA INDEX NAME)



● 1/4 Ce(IV)

RN 13138-45-9 HCAPLUS
CN Nitric acid, nickel(2+) salt (8CI, 9CI) (CA INDEX NAME)

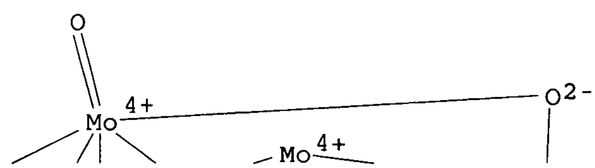


● 1/2 Ni(II)

L32 ANSWER 6 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:804209 HCAPLUS
DN 142:417771
TI Band gap energies calculated from UV-VIS-DRS spectra of some heteropoly compounds catalysts with Keggin structure
AU Sasca, V.; Popa, A.; Selejean, Carmen
CS Chemistry Institute, Romanian Academy, Timisoara, RO-1900, Rom.
SO Annals of West University of Timisoara, Series of Chemistry (**2003**), 12(3, Pt. 4), 1383-1392
CODEN: AWTCFO; ISSN: 1224-9513

PB Editura Universitatii de Vest
DT Journal
LA English
AB The band gap energies of heteropoly compound derived from H3PMo12O40 and H4PVM11O40 and their salts with monovalent cation (NH4, K,Cs) were calculated from their UV-VIS-DRS spectra. The values of the band gap energy have changed in function of **composition**, especially in function of counter-ion, when the size of the counter-ion decreases, the bong gap energy values for higher temperature it could be the compacting of structure through loss of the crystallization water and some ammonium counter-ion decomposition for heteropoly compds. containing ammonium resulting a stronger interaction between Keggin Units. The crystallites size could be in a linear correlation with band gap energy because of nanometric crystallite sizes.
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 73
IT **12026-57-2**, H3PMo12O40 **12293-15-1** 104548-60-9
208102-35-6 475678-68-3 615536-30-6 615536-31-7 615536-32-8
615536-34-0
RL: **CAT (Catalyst use)**; PRP (Properties); USES (Uses)
(band gap energies calculated from UV-VIS-DRS spectra of some **heteropoly** compds. catalysts with Keggin structure)
IT **12026-57-2**, H3PMo12O40 **12293-15-1**
RL: **CAT (Catalyst use)**; PRP (Properties); USES (Uses)
(band gap energies calculated from UV-VIS-DRS spectra of some **heteropoly** compds. catalysts with Keggin structure)
RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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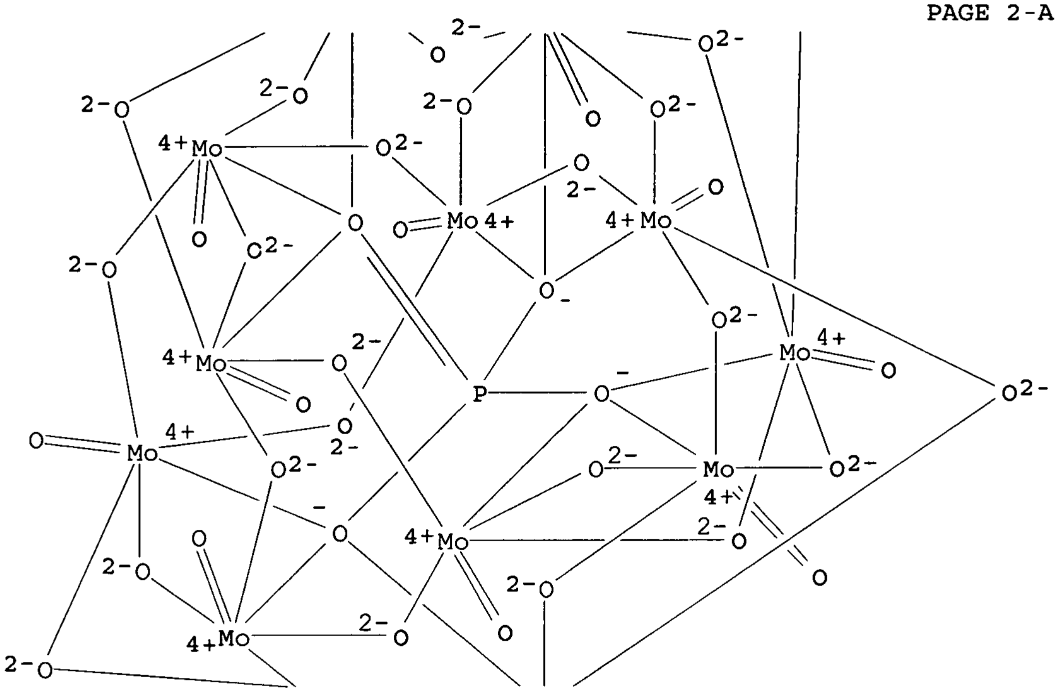

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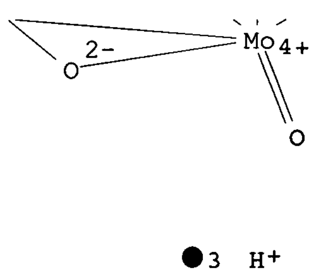
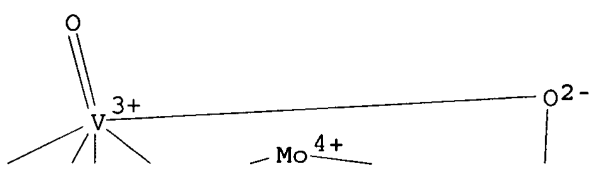


RN 12293-15-1 HCAPLUS
CN Vanadate(4-), (eicosa-μ-oxoundecaoxoundecamolybdate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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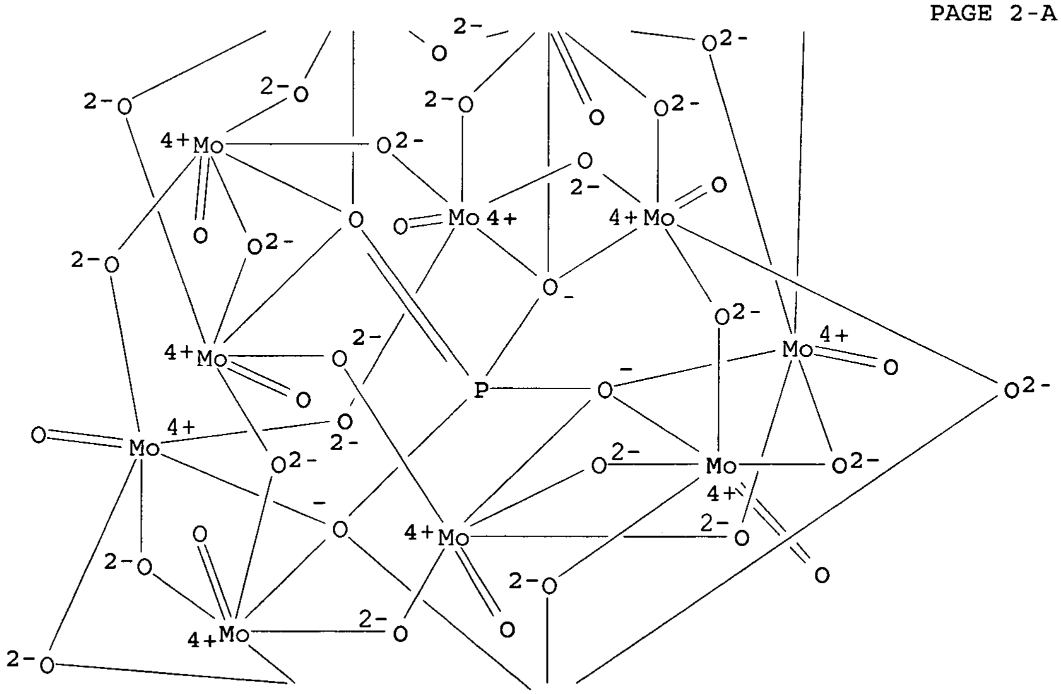
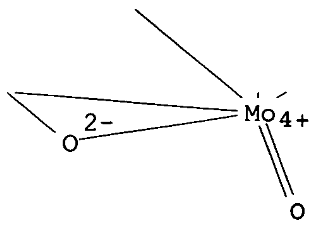




PAGE 3-A

●4 H^+

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

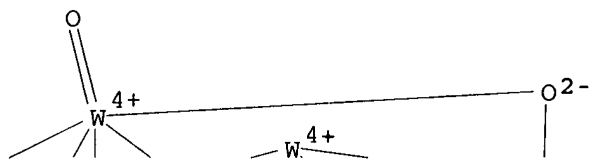
L32 ANSWER 7 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:609973 HCAPLUS
DN 141:142184
TI Catalyst **composition** comprising a heteropoly acid, zinc, and a support component for alkylating at least one isoparaffin with at least one C5 olefin
IN Randolph, Bruce B.
PA Phillips Petroleum Company, USA
SO U.S. Pat. Appl. Publ., 23 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004147795	A1	20040729	US 2003-350716	20030124 <--
PRAI	US 2003-350716		20030124 <--		

AB An alkylation process of contacting at least one isoparaffin and at least one C5 olefin in the presence of a catalyst **composition** under conversion conditions to provide for converting the at least one isoparaffin and the at least one C5 olefin is provided. The catalyst **composition** contains a heteropoly acid, zinc, and a support component.
IC ICM C07C005-23
ICS B01J027-19
INCL 585734000; 502253000; 502208000; 502210000; 502211000
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 48, 67
IT Alkenes, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(C5; catalyst **composition** comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
IT Calcination
Drying
(catalyst **composition** comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
IT Zeolites (synthetic), uses
RL: CAT (Catalyst use); USES (Uses)
(catalyst **composition** comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)

IT Isoalkanes
RL: RCT (Reactant); RACT (Reactant or reagent)
(catalyst **composition** comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
IT Alkylation
Alkylation catalysts
(**composition** comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
IT Heteropoly acids
RL: RCT (Reactant); RACT (Reactant or reagent)
(**composition** comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
IT **1343-93-7**, 12-Tungstophosphoric acid 7440-66-6, Zinc, uses **12026-57-2**, 12-Molybdophosphoric acid **12027-38-2**, 12-Tungstosilicic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst **composition** comprising a **heteropoly** acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
IT 75-28-5, Isobutane 75-83-2, 2,2-Dimethylbutane 78-78-4, Isopentane 79-29-8, 2,3-Dimethylbutane 96-14-0, 3-Methylpentane 107-83-5, 2-Methylpentane 108-08-7, 2,4-Dimethylpentane 109-67-1, 1-Pentene 464-06-2, 2,2,3-Trimethylbutane 513-35-9, 2-Methyl-2-butene 562-49-2, 3,3-Dimethylpentane 563-46-2, 2-Methyl-1-butene 590-35-2, 2,2-Dimethylpentane 591-76-4, 2-Methylhexane 617-78-7, 3-Ethylpentane
RL: RCT (Reactant); RACT (Reactant or reagent)
(catalyst **composition** comprising a heteropoly acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
IT **1343-93-7**, 12-Tungstophosphoric acid **12026-57-2**, 12-Molybdophosphoric acid **12027-38-2**, 12-Tungstosilicic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst **composition** comprising a **heteropoly** acid zinc and a support component for alkylating at least one isoparaffin with at least one C5 olefin)
RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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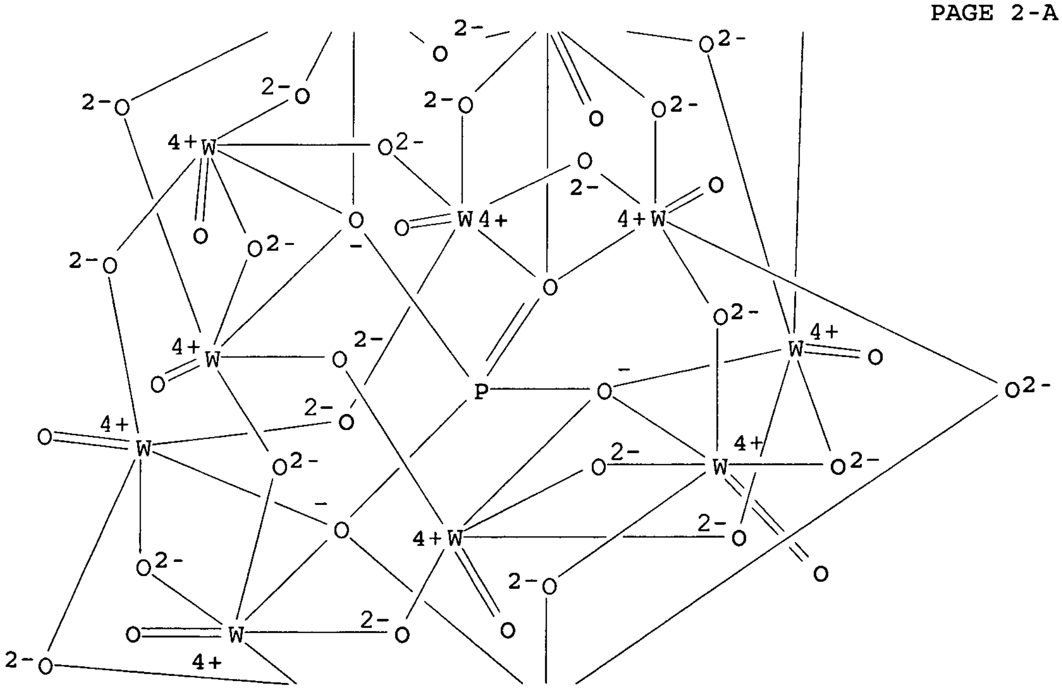

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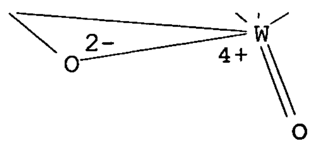
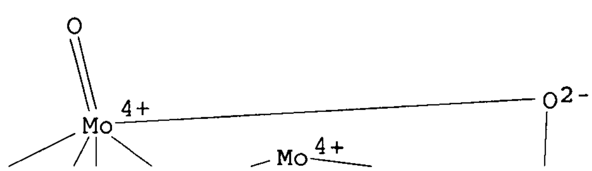


● 3 H^+

RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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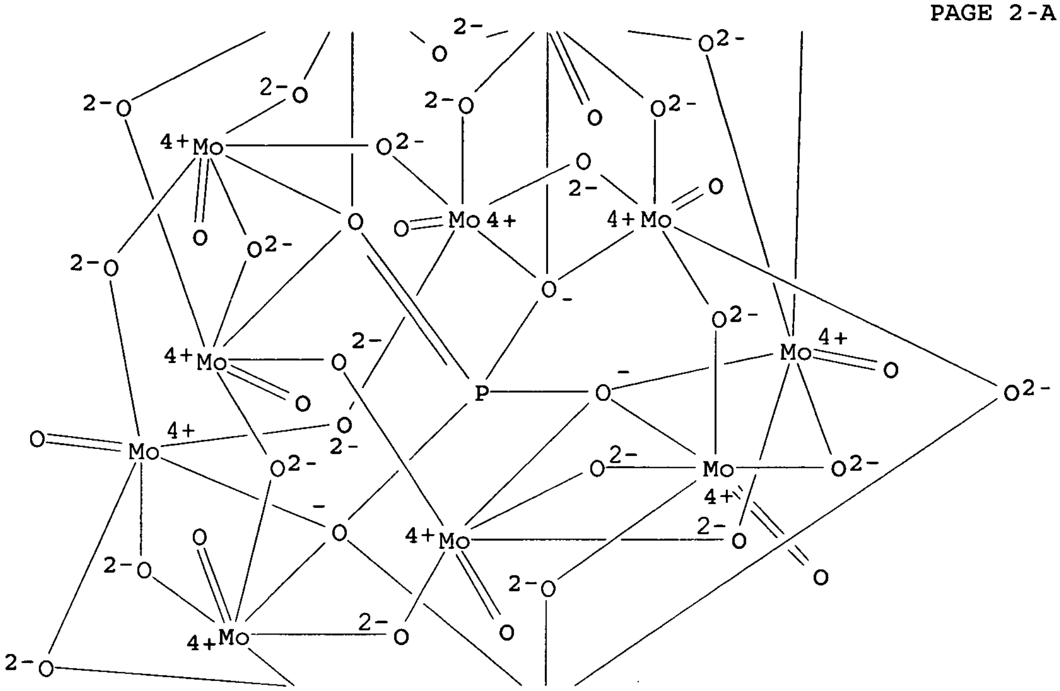

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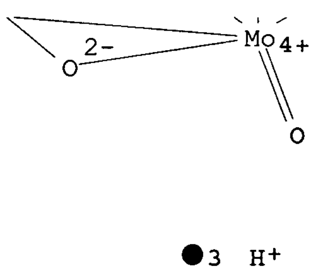
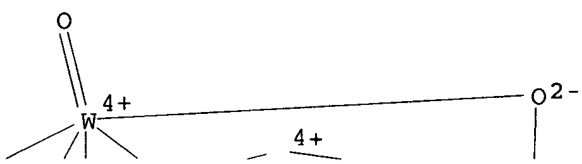


RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp a.O':κO':κO':κO'':κO'':κO'':κO''':.kap pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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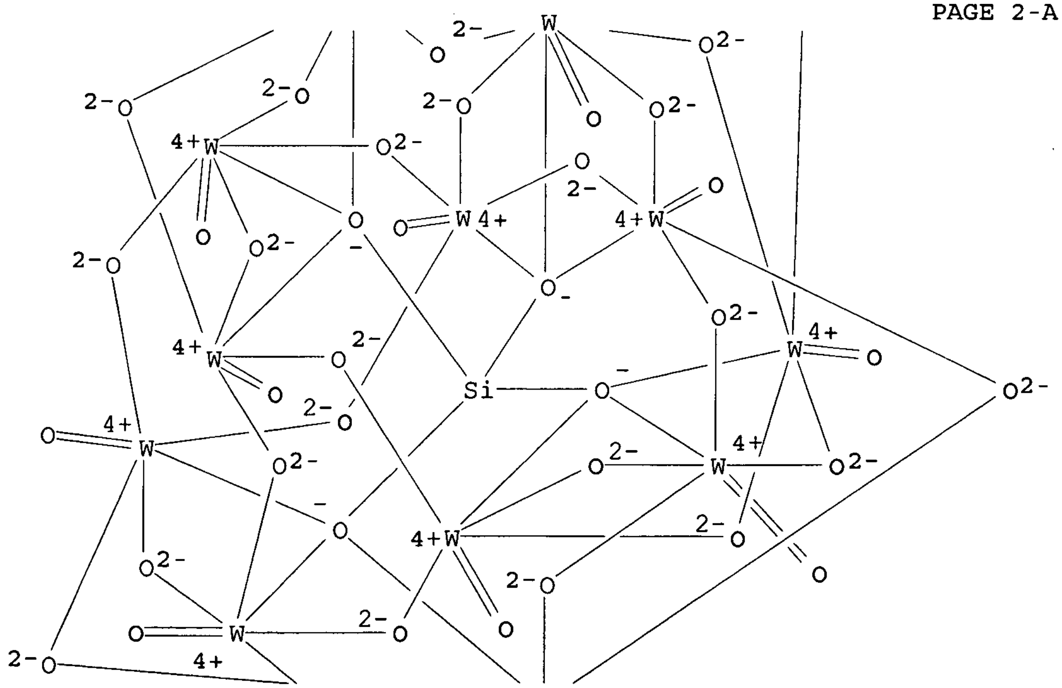

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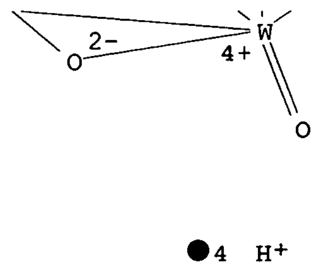

L32 ANSWER 8 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:510391 HCAPLUS
DN 141:77472
TI Hetero-polyoxometalate anion as catalyst for liquid phase reactions
IN Yonehara, Hiroshi; Sumida, Yasutaka; Mizuno, Tetsutaka
PA Nippon Shokubai Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 30 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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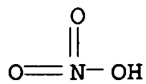
PI	JP 2004174486	A2	20040624	JP 2003-349996	20031008 <--
PRAI	JP 2002-326690	A	20021111 <--		

AB The invention refers to a catalyst for liquid phase reactions comprising a hetero-polyoxometalate anion wherein the heteroatom is a transition metal, and the poly atom is Wand/or Mo and a element from groups 3 - 16 in the periodic table.
IC ICM B01J031-34
ICS B01J035-02; C07B061-00; C07C027-12; C07C029-50; C07C033-20; C07C035-08; C07C035-20; C07C045-33; C07C047-542; C07C049-403; C07C049-607; C07C051-265; C07C063-04; C07D301-06; C07D303-04; C07D303-06; C07D493-04
CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
IT 1643-19-2, Tetrabutylammonium bromide 10049-08-8, Ruthenium chloride 10377-66-9, Manganese **nitrate** **10421-48-4**, Ferric **nitrate** 13548-38-4, Chromium **nitrate** Cr(NO3)3 27774-13-6 **167103-95-9**
RL: **CAT (Catalyst use)**; DEV (Device component use); USES (Uses)
(hetero **polyoxometalate** anion as catalyst for liquid phase reactions from)
IT **10421-48-4**, Ferric **nitrate** **167103-95-9**
RL: **CAT (Catalyst use)**; DEV (Device component use); USES (Uses)
(hetero **polyoxometalate** anion as catalyst for liquid phase reactions from)
RN 10421-48-4 HCAPLUS
CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)



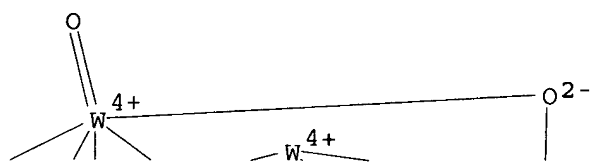
●1/3 Fe(III)

RN 167103-95-9 HCAPLUS
CN Tungstate(9-), cobaltateeicosa-μ-oxo-μ3-oxotri-μ4-oxopentadecaoxoundeca-, nonapotassium (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L32 ANSWER 9 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:475756 HCAPLUS
DN 142:200428
TI Catalytic oxidative condensation of methane over supported catalysts based on tungsten heteropoly compounds
AU Savel'eva, G. A.; Dusumov, K.; Shingisbaev, B. M.; Tungatarova, S. A.; Esensarin, M. S.
CS Inst. Org. Kataliza Elektrokhim, MON Kaz., Almaty, Kazakhstan
SO Gorenie i Plazmokhimiya (**2003**), 1(3), 265-277
CODEN: GPOLB5; ISSN: 1683-3902
PB Izdatel'stvo "Kazak Universiteti"
DT Journal
LA Russian
AB Catalyst **composition** and process parameters are optimized for natural gas (methane) oxidative coupling over aluminosilicate- and zeolite-supported tungstosilicate and tungstophosphate catalysts. Effect of cations in tungstate catalyst on the activity and selectivity was studied with the intent to maximize ethylene formation. It was established that 5-15% catalysts on the base of [PW12]-HPC over Si-containing carriers have optimal properties for the forming of ethylene from methane. Water vapor addition to the reaction mixture pos. affects product formation and thermal stability of the catalysts.
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 35, 67
IT **1343-93-7**, Tungstophosphoric acid (H3PW12O40) **12027-38-2**
, Tungstosilicic acid (H4SiW12O40)
RL: **CAT (Catalyst use)**; USES (Uses)
(catalytic oxidative condensation of methane over supported catalysts based on tungsten **heteropoly** compds.)
IT **1343-93-7**, Tungstophosphoric acid (H3PW12O40) **12027-38-2**
, Tungstosilicic acid (H4SiW12O40)
RL: **CAT (Catalyst use)**; USES (Uses)
(catalytic oxidative condensation of methane over supported catalysts based on tungsten **heteropoly** compds.)
RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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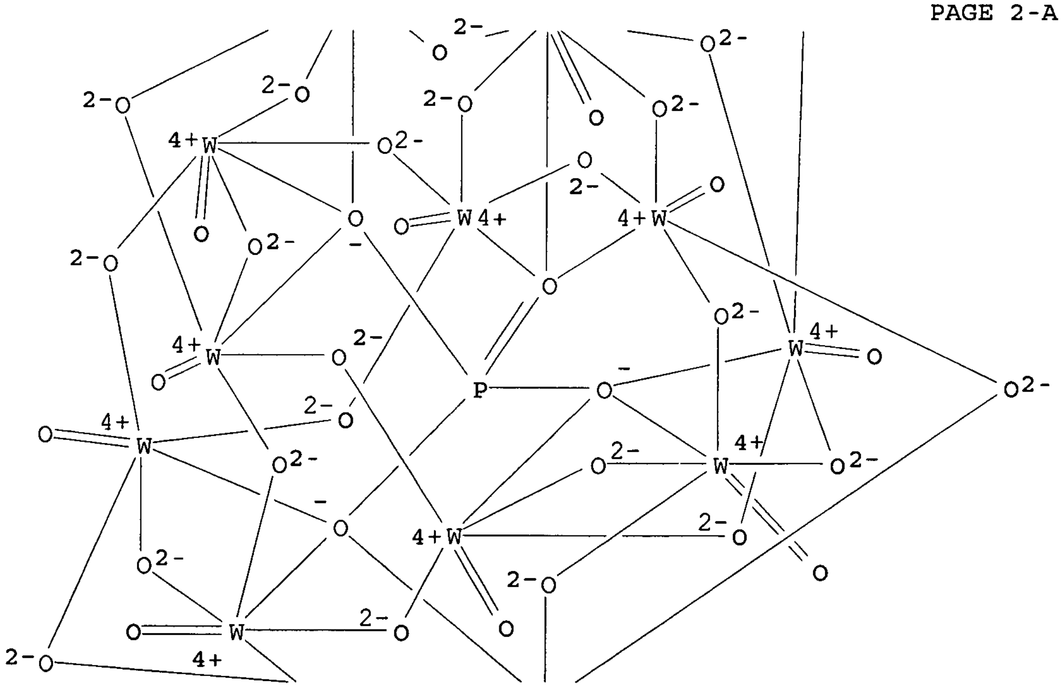
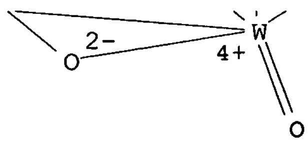


PAGE 3-A

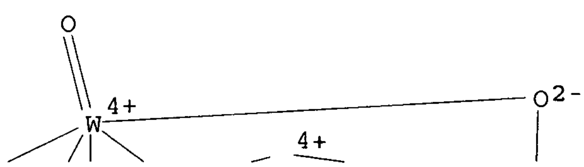


●3 H^+

RN 12027-38-2 HCAPLUS

CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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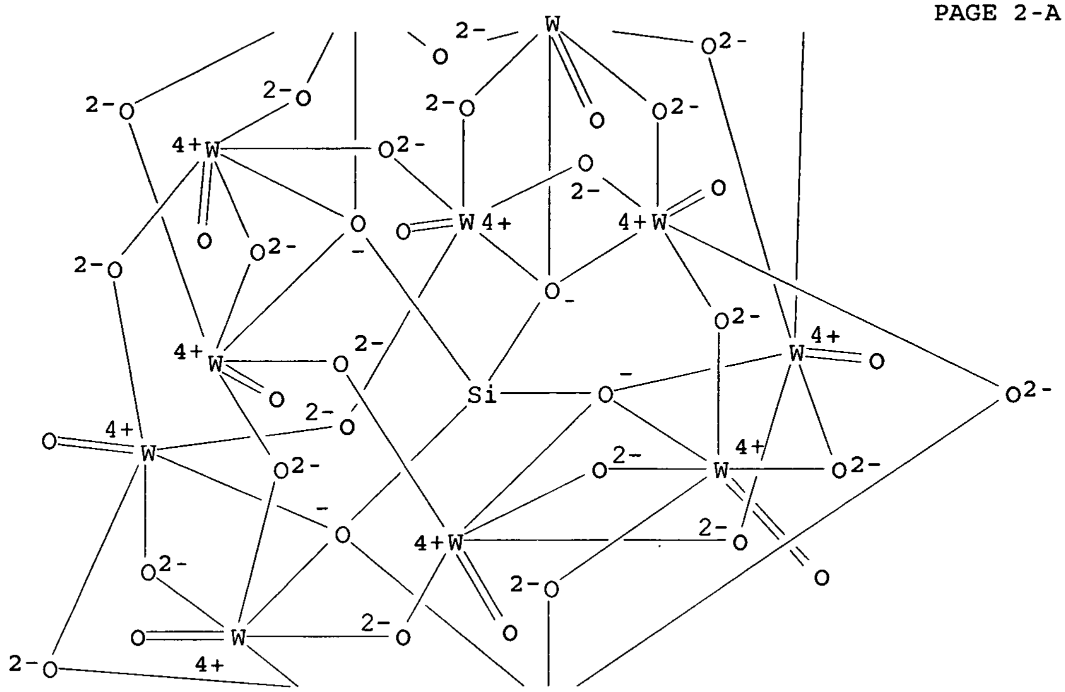

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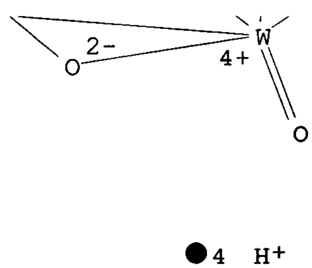


L32 ANSWER 10 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:340747 HCAPLUS
DN 141:79214
TI Comparative Study of Homogeneous and Heterogeneous Photocatalytic Redox Reactions: PW120403- vs TiO2
AU Kim, Soonhyun; Park, Hyunwoong; Choi, Wonyong
CS School of Environmental Science and Engineering and Department of Chemistry, Pohang University of Science and Technology, Pohang, 790-784, S. Korea
SO Journal of Physical Chemistry B (**2004**), 108(20), 6402-6411
CODEN: JPCBFK; ISSN: 1520-6106
PB American Chemical Society
DT Journal
LA English
AB Polyoxometalates (POMs) as a homogeneous photocatalyst and semiconductor oxide as a heterogeneous photocatalyst share many aspects of similarity in

their operating mechanisms. This study systematically compares various photocatalytic oxidation and reduction reactions of PW12O403- (a POM) and TiO2 in water to demonstrate that the two photocatalysts are very different in many ways. Both POM and TiO2 can photooxidize various organic compds. with comparable rates, but the POM-mediated mineralization is markedly slower than the mineralization with TiO2 under the exptl. conditions employed in this study. Kinetic studies using tert-Bu alc. as an OH radical scavenger suggest that OH radicals are the sole dominant photooxidant in POM-mediated degrdns. regardless of the kind of substrates tested, whereas both OH radicals and direct hole transfers take part in TiO2 photocatalysis. POM immobilization on silica support and surface fluorination of TiO2 significantly modified the kinetics and intermediate distribution. POM-mediated photoreductive dechlorination of CCl4 and trichloroacetate was negligible, whereas the dechlorination with TiO2 was markedly faster. The rate of electron transfer from POM- to reducible substrates seems to be significantly slower than the rate of conduction band electron transfer on TiO2 mainly due to the strong electron affinity of POM. The effects of H2O2 addition on photocatalytic reactivity are also very different between POM and TiO2. Detailed kinetic and mechanistic comparisons between PW12O403- and TiO2 photocatalysts are presented and discussed to understand the similarities and differences.

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): **59**, 60, 78

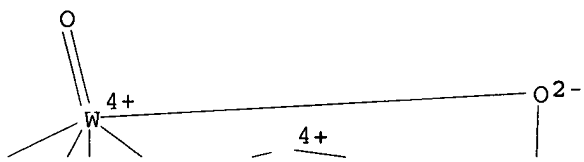
IT **12027-38-2**, Dodecatungstosilicic acid (H4SiW12O40)
RL: **CAT (Catalyst use)**; CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(comparison of kinetics and mechanisms of photocatalytic reactions of **polyoxometalates** and TiO2 in water)

IT **12027-38-2**, Dodecatungstosilicic acid (H4SiW12O40)
RL: **CAT (Catalyst use)**; CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(comparison of kinetics and mechanisms of photocatalytic reactions of **polyoxometalates** and TiO2 in water)

RN 12027-38-2 HCAPLUS

CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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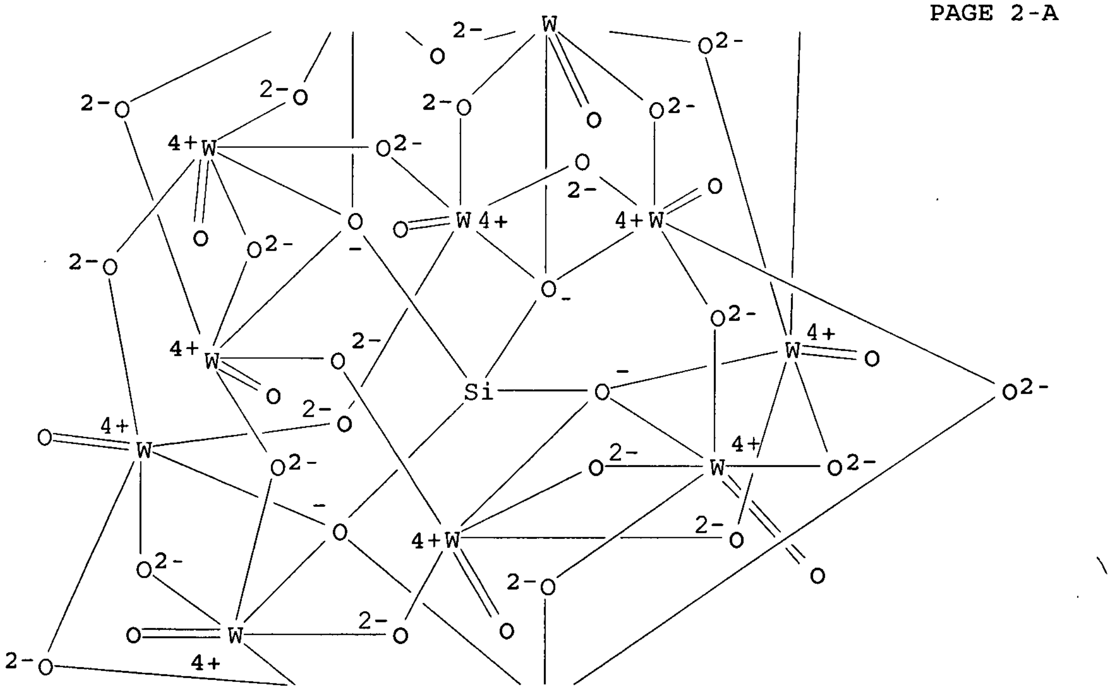

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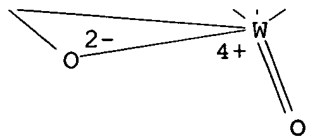

●4 H^+

RE.CNT 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 11 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:249291 HCAPLUS
DN 140:270552
TI Catalytic process for manufacturing of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2
IN Fremy, Georges; Essayem, Nadine; Lacroix, Michel; Zausa, Elodie
PA Atofina, Fr.
SO Fr. Demande, 15 pp.
CODEN: FRXXBL
DT Patent
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	FR 2844726	A1	20040326	FR 2002-11922	20020925	<--
	FR 2844726	B1	20041203			
	CA 2499632	AA	20040408	CA 2003-2499632	20030923	<--
	WO 2004029022	A2	20040408	WO 2003-FR2790	20030923	<--
	WO 2004029022	A3	20040506			

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RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

	EP 1542795	A2	20050622	EP 2003-773807	20030923	<--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

	JP 2006500417	T2	20060105	JP 2004-539126	20030923	<--
	US 2006025633	A1	20060202	US 2005-528861	20050323	<--
PRAI	FR 2002-11922	A	20020925 <--			
	WO 2003-FR2790	W	20030923 <--			

OS MARPAT 140:270552
AB The invention is directed to a catalytic process for preparation mercaptans RSR' from thioether and hydrogen sulfide, in the presence of hydrogen and of a catalytic **composition** including a strong acid, in particular a heteropolyacids, and at least a Group VIII metal [R, R' = independently cyclo/alkyl]. The advantages include lower reaction temps., high yield and purity of mercaptans, and high activity of the catalyst in time. Thus, mixing an aqueous solution of SiO2 with PdCl2 and H3PW12O40 (HPW) gave a

catalytic **composition** consisting of 59% SiO_2, 1% Pd, and 40% HPW. Et mercaptan was prepared, in 49.3% yield, by hydrogen sulfide-cleavage of di-Et sulfide in the presence of H_2 and the above catalytic **compn**. at 15 bar and 235°.

IC ICM B01J027-182
ICS B01J027-186; B01J023-30; B01J021-18; C07C319-04

CC 23-7 (Aliphatic Compounds)
Section cross-reference(s): 45, 67

IT Group VIII elements
Heteropoly acids
RL: CAT (Catalyst use); USES (Uses)
(catalyst **composition**; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO2)

IT Catalysts
(catalytic **composition** component; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO2)

IT Zeolites (synthetic), uses
RL: CAT (Catalyst use); USES (Uses)
(catalytic **composition** component; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO2)

IT Resins
RL: CAT (Catalyst use); USES (Uses)
(cationic; catalyst **composition** component; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO2)

IT Bond cleavage
Bond cleavage catalysts
Catalysis
Solid phase synthesis
(preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO2)

IT Thiols, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(products; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO2)

IT Thioethers
RL: RCT (Reactant); RACT (Reactant or reagent)
(starting materials; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO2)

IT 7647-10-1, Palladium chloride
RL: RGT (Reagent); RACT (Reactant or reagent)
(catalyst precursor; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO2)

IT 1314-23-4, Zirconium dioxide, uses **1343-93-7D**, potassium, rubidium, cesium, ammonium salts 1344-28-1, Alumina, uses 7439-88-5, Iridium, uses 7440-02-0, Nickel, uses 7440-04-2, Osmium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-44-0, Carbon, uses 7440-48-4, Cobalt, uses 7631-86-9, Silica, uses **12027-38-2D**, potassium, rubidium, cesium, ammonium salts 12027-43-9 **12411-74-4D**, potassium, rubidium, cesium, ammonium salts 12501-23-4 13463-67-7, Titanium dioxide, uses 14644-61-2 39290-95-4, Zirconium tungstate 84973-55-7
RL: **CAT (Catalyst use)**; USES (Uses)

(catalytic **composition** component; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular **heteropolyacids**/Pd/SiO2)

IT 75-08-1P, Ethyl mercaptan
RL: IMF (Industrial manufacture); PREP (Preparation)
(mercaptan product; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO2)

IT 7440-18-8, Ruthenium, uses
RL: CAT (Catalyst use); USES (Uses)
(preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO2)

IT 7783-06-4, Hydrogen sulfide, reactions
RL: RCT (Reactant); RGT (Reagent); RACT (Reactant or reagent)
(preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO2)

IT 1333-74-0, Hydrogen, reactions
RL: RGT (Reagent); RACT (Reactant or reagent)
(preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO2)

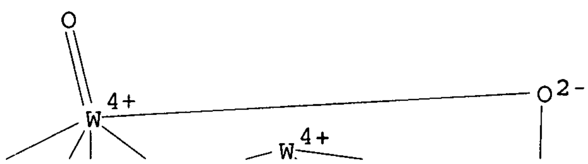
IT 352-93-2, Diethylsulfide
RL: RCT (Reactant); RACT (Reactant or reagent)
(starting material; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular heteropolyacids/Pd/SiO2)

IT **1343-93-7D**, potassium, rubidium, cesium, ammonium salts
12027-38-2D, potassium, rubidium, cesium, ammonium salts
12411-74-4D, potassium, rubidium, cesium, ammonium salts
RL: **CAT (Catalyst use)**; USES (Uses)
(catalytic **composition** component; preparation of mercaptans by hydrogen sulfide-cleavage of thioether in the presence of H2, and a catalyst **composition**, in particular **heteropolyacids**/Pd/SiO2)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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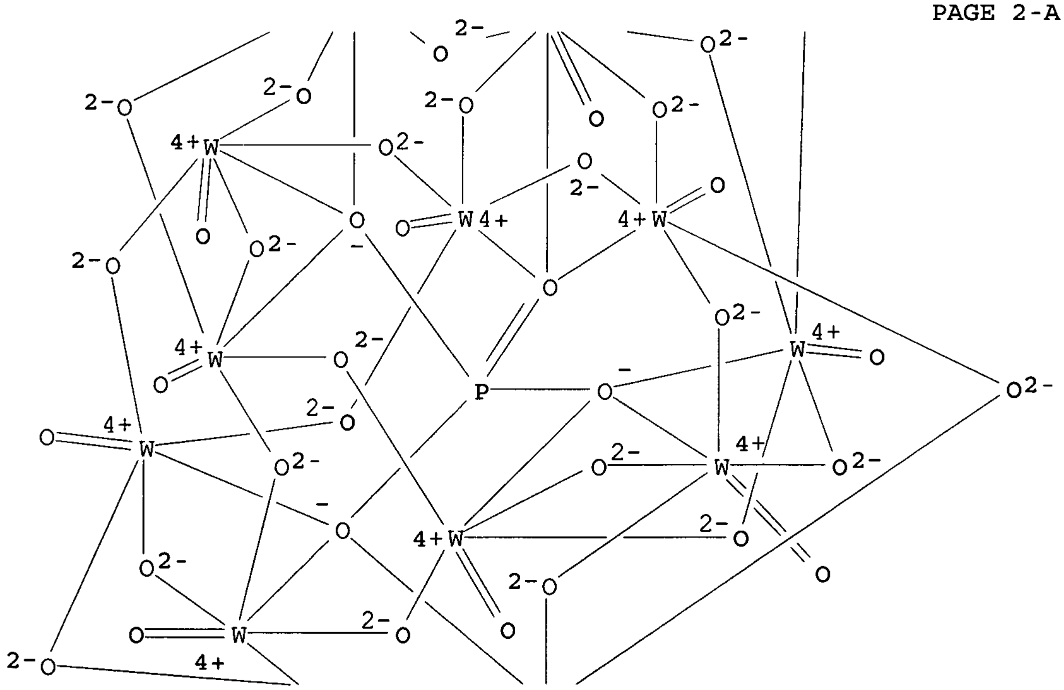

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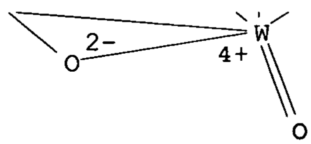
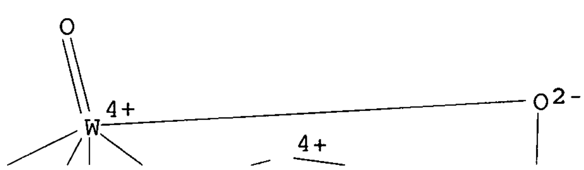


●3 H+

RN 12027-38-2 HCAPLUS

CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp a.O':κO':κO':κO'':κO'':κO'':κO''':.kap pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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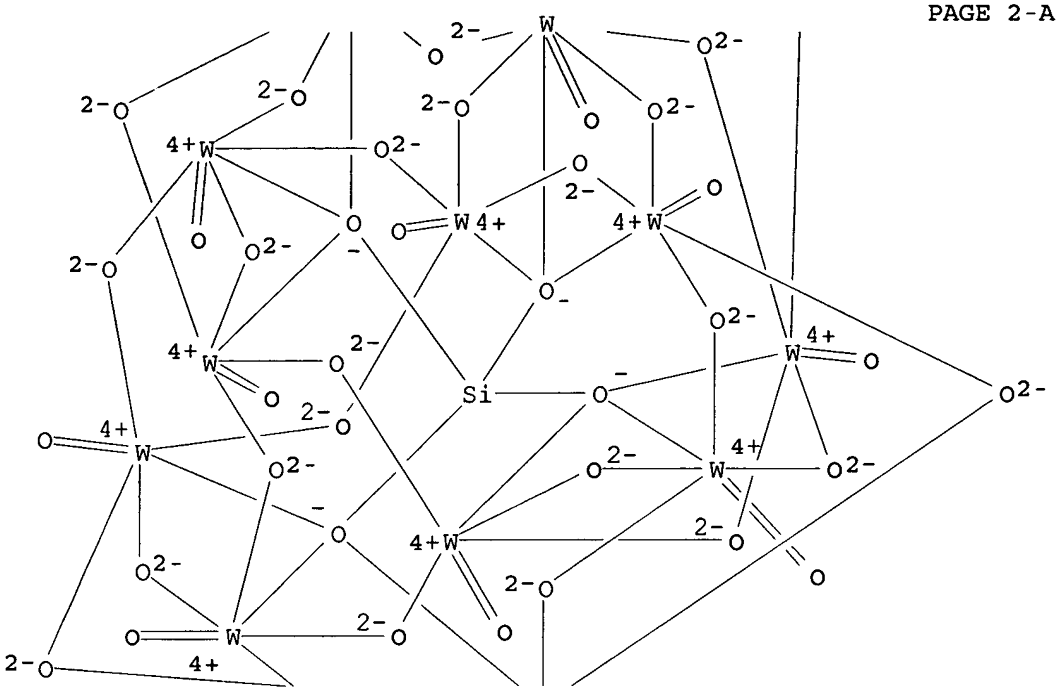

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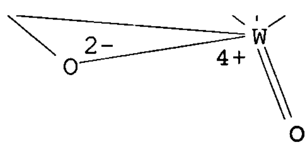


●4 H^+

RN 12411-74-4 HCAPLUS
CN Tungstate(6-), hexatriaconta-μ-oxooctadecaoxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':κO'':.kapp
a.O''':κO''']]octadeca-, hexahydrogen (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 12 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:200346 HCAPLUS
DN 140:238000
TI Manufacture of heteropoly acid salts for catalysts
IN Kodama, Tamotsu; Niina, Hideaki
PA Asahi Kasei Chemical Corporation, Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
FAN.CNT 1

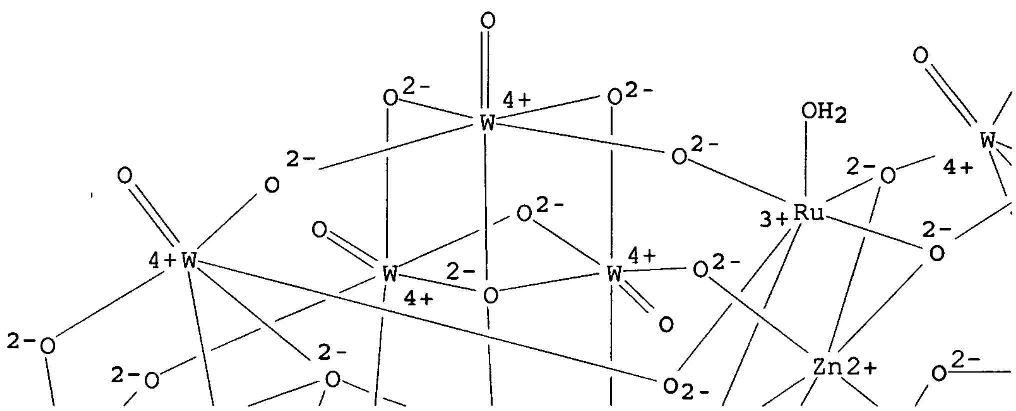
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004075633	A2	20040311	JP 2002-240441	20020821 <--
PRAI	JP 2002-240441		20020821 <--		

AB The claimed process comprises mixing sandwich-type heteropoly acid salts AaX19Y5O68 (A = monovalent metal cation, divalent metal cation, and/or NH4+; a = 4.5-12; X = W, Mo, and/or V; Y = Zn and/or Co) with complexes of transition metals belonging to Group 7-12 and 5th or 6th period elements in an organic solvent at 60-180° to give the title heteropoly acid salts A'aX19Y(5-b)ZbO68 (A' = monovalent metal cation, divalent metal cation, and/or NH4+; Z = transition metals belonging to Group 7-12 and 5th or 6th period elements). The process provides high production yield and reproducibility and the resulting heteropoly acid salts are especially suitable for oxidation catalysts.
IC ICM C07C211-63
ICS B01J031-02; C07C209-68
CC 49-7 (Industrial Inorganic Chemicals)
Section cross-reference(s): 67
IT **667915-85-7P 667938-85-4P**
RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(preparation and reaction of; manufacture of **heteropoly** acid salts containing platinum group metal for catalysts)
IT 127-09-3, Sodium acetate 5137-55-3, Trioctylmethylammonium chloride 7447-40-7, Potassium chloride, reactions 7779-88-6, Zinc **nitrate** 13472-45-2, Sodium tungstate 41290-68-0
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of; manufacture of heteropoly acid salts containing platinum group metal for catalysts)
IT **667915-85-7P 667938-85-4P**
RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(preparation and reaction of; manufacture of **heteropoly** acid salts containing platinum group metal for catalysts)
RN 667915-85-7 HCAPLUS
CN 1-Octanaminium, N-methyl-N,N-dioctyl-, bis(aquaruthenate)octatriaconta-μ-oxotetra-μ3-oxoocta-μ4-oxooctadecaoxotrizincatenonadecatungstat e(10-) (10:1) (9CI) (CA INDEX NAME)

CM 1

CRN 502968-07-2
CMF H4 O70 Ru2 W19 Zn3
CCI CCS

PAGE 1-A



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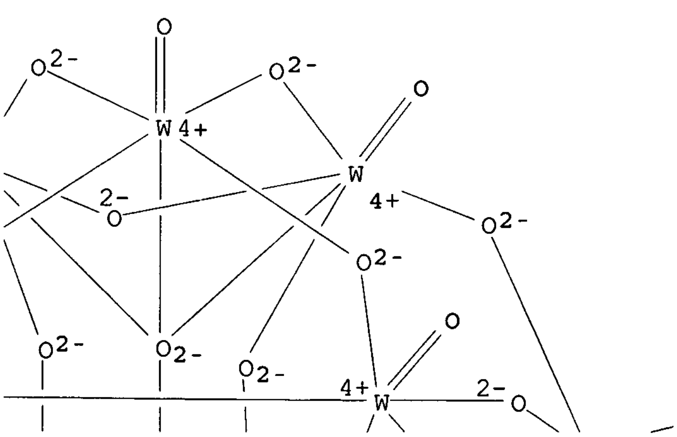

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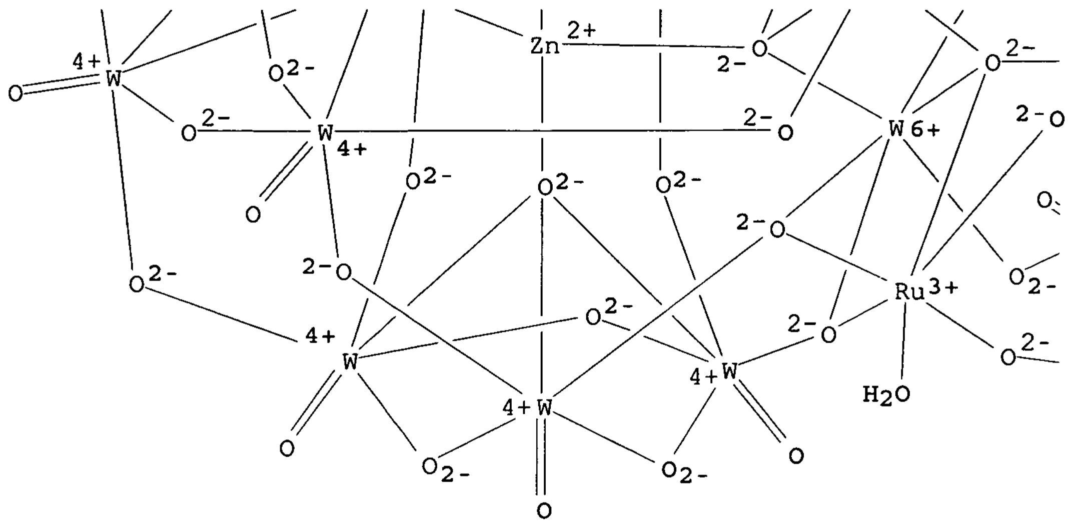
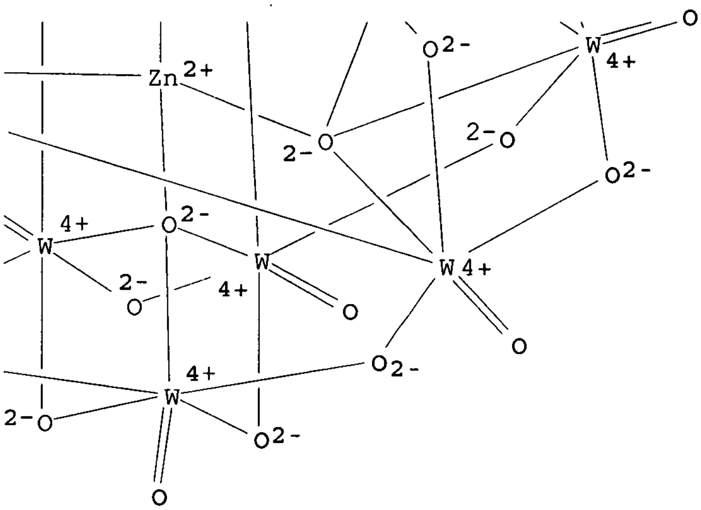
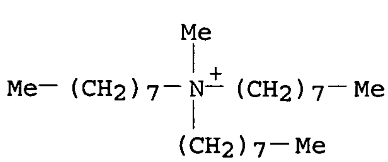


PAGE 2-B



CM 2

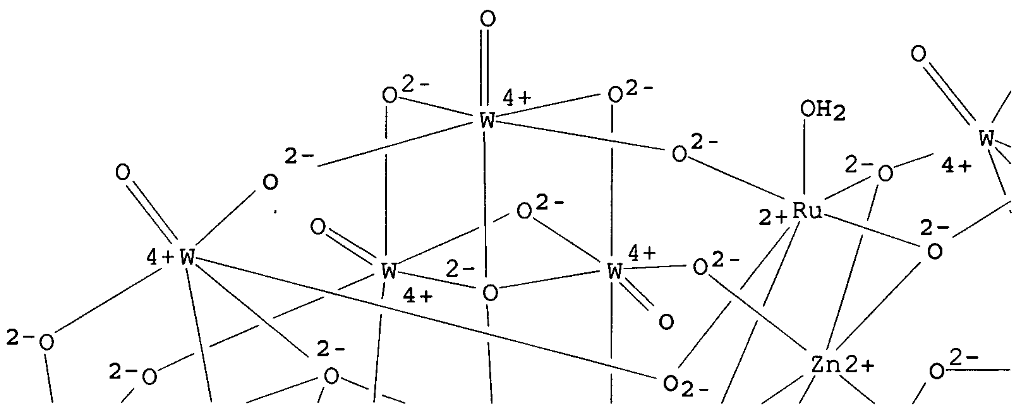
CRN 22061-11-6
CMF C25 H54 N



RN 667938-85-4 HCAPLUS

CN Tungstate(12-), bis(aquaruthenate)octatriaconta-μ-oxotetra-μ3-oxoocta-μ4-oxooctadecaoxotrizincatenonadeca-, dodecasoodium (9CI) (CA INDEX NAME)

PAGE 1-A



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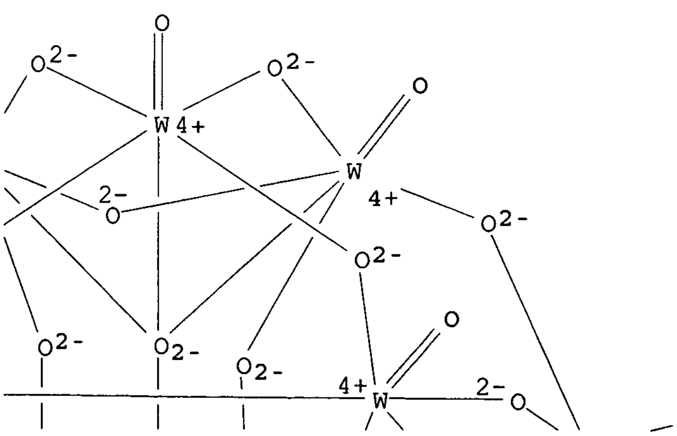

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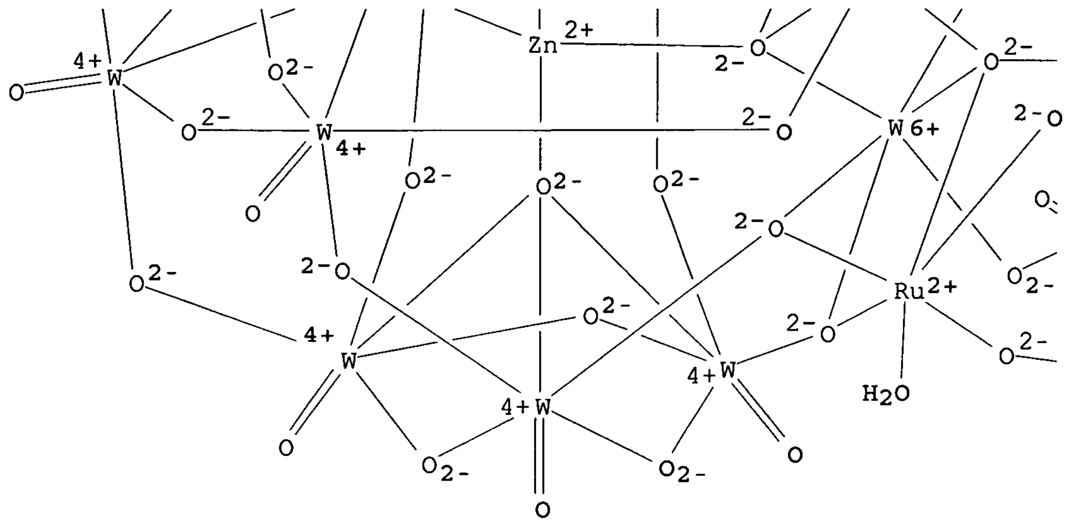

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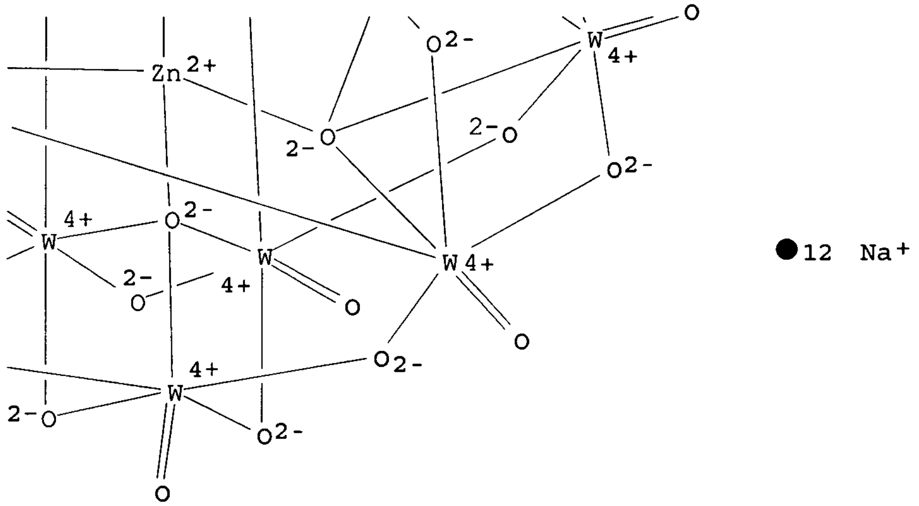
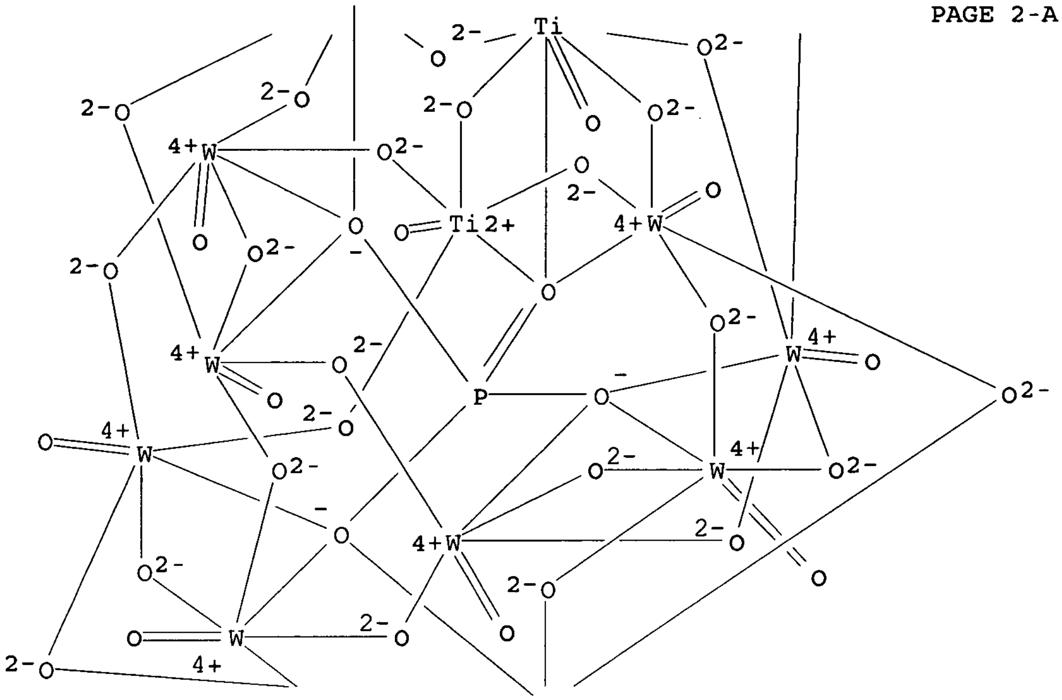


L32 ANSWER 13 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:46285 HCAPLUS
DN 140:204249
TI Photocatalytic degradation of dye naphthol blue black in the presence of zirconia-supported Ti-substituted Keggin-type polyoxometalates
AU Jiang, Chunjie; Guo, Yihang; Hu, Changwen; Wang, Chungang; Li, Danfeng
CS Faculty of Chemistry, Northeast Normal University, Changchun, 130024, Peop. Rep. China
SO Materials Research Bulletin (**2004**), 39(2), 251-261
CODEN: MRBUAC; ISSN: 0025-5408
PB Elsevier Science Ltd.
DT Journal

LA English
AB Zirconia-supported Ti-substituted Keggin-type polyoxometalates, Li5PW11TiO40/ZrO2 (PW11Ti/ZrO2) and K7PW10Ti2O40/ZrO2 (PW10Ti2/ZrO2), were prepared by incorporating PW11Ti and PW10Ti2 cluster into a zirconia matrix via a sol-gel technique. These insol. and readily separable composites were characterized by DR-UV (DR: diffuse reflectance) and FT-IR spectra, 31P MAS NMR, ICP-AES, and nitrogen adsorption determination, indicating that the clusters were chemical attached to the zirconia supports, and the primary Keggin structure remained intact. The photocatalytic activity of the supported PW11Ti and PW10Ti2 was tested via degradation of an aqueous dye naphthol blue black (NBB). It indicated that the dye NBB can be degraded totally and mineralized into the inorg. products such as CO2, NH4+, NO3-, and SO42- ions by irradiating the composite slurry in the near-UV area. Dropped of PW11Ti or PW10Ti2 cluster from the zirconia matrix into the reaction system was hardly observed during the photocatalytic tests, attributed to the strong chemical interactions between the Keggin units and the zirconia support.
CC 60-2 (Waste Treatment and Disposal)
Section cross-reference(s): 40, 74
IT 124-38-9, Carbon dioxide, formation (nonpreparative) 14797-55-8, **Nitrate** NO3-, formation (nonpreparative) 14798-03-9, Ammonium, formation (nonpreparative) 14808-79-8, Sulfate, formation (nonpreparative)
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(degradation product; photocatalytic degradation of dye naphthol blue black in the presence of zirconia-supported Ti-substituted Keggin-type polyoxometalates)
IT **84303-06-0 143069-91-4**
RL: **CAT (Catalyst use)**; USES (Uses)
(photocatalytic degradation of dye naphthol blue black in the presence of zirconia-supported Ti-substituted Keggin-type **polyoxometalates**
)
IT **84303-06-0 143069-91-4**
RL: **CAT (Catalyst use)**; USES (Uses)
(photocatalytic degradation of dye naphthol blue black in the presence of zirconia-supported Ti-substituted Keggin-type **polyoxometalates**
)
RN 84303-06-0 HCAPLUS
CN Titanate(7-), (heptadeca-μ-oxodecaoxodecatungstate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa .O':κO':κO'':κO'':κO'':κO''':κO''':.ka ppa.O''']]di-, heptapotassium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



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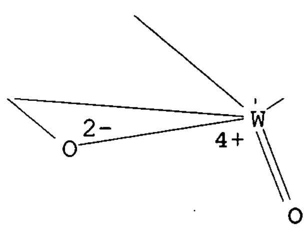
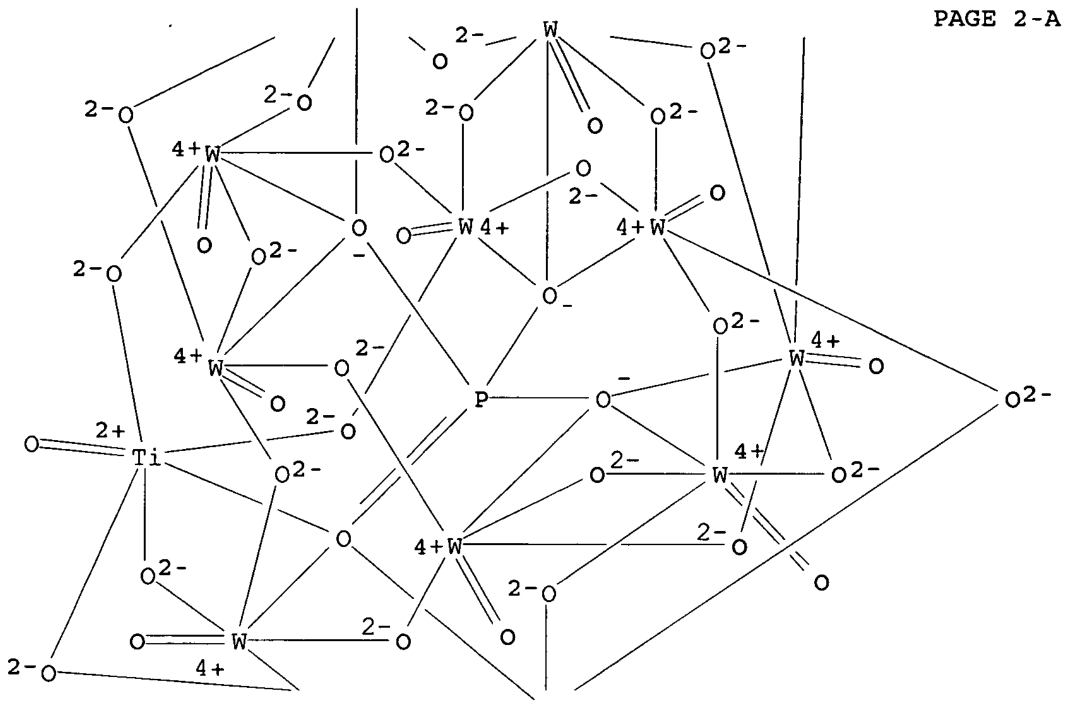


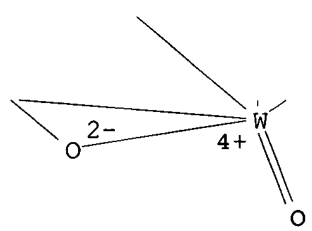
● 7 K^+

RN 143069-91-4 HCAPLUS
CN Titanate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, pentalithium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *



PAGE 2-A



PAGE 3-A

● 5 Li^+

RE.CNT 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 14 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:972021 HCAPLUS
DN 140:16564
TI Process for producing aromatic compounds by friedel-crafts reaction
IN Okuhara, Toshio; Nakajo, Tetsuo
PA Showa Denko K. K., Japan
SO PCT Int. Appl., 27 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

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            GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK, LR, LS, LT,
            LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL,
            PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA,
            UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
        RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
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            FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,
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     JP 2004059572        A2    20040226    JP 2003-73802          20030318 <--
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            IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
     US 2005222457        A1    20051006    US 2004-516454         20041203 <--
PRAI JP 2002-161164       A     20020603  <--
     US 2002-386744P      P     20020610  <--
     WO 2003-JP6078       W     20030515  <--
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AB The patent relates to the preparation of an aromatic compound by Friedel-Crafts reaction product, which comprises reacting an aromatic compound with an ester compound in the presence of a heteropoly acid-containing solid acid catalyst. Thus, Friedel Crafts reaction was conducted for a **composition** comprising p-xylene and γ-butyrolactone in presence of silica supported tungstosilicic acid catalyst and produced 5,8-dimethyltetralone (39.9% yield) and trimethylindanone (2.6% yield).

IC ICM C07C045-46
ICS C07C045-59; C07C051-09; C07B041-06; C07B041-08

CC 25-16 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
Section cross-reference(s): 24

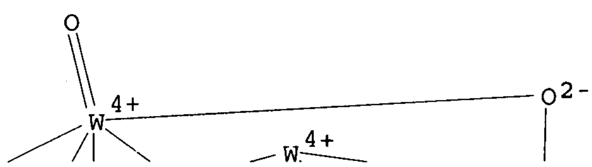
IT **1343-93-7**, Phosphotungstic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(producing aromatic compds. by Friedel-Crafts reaction of lactone in presence of supported **heteropoly** acid catalyst)

IT **1343-93-7**, Phosphotungstic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(producing aromatic compds. by Friedel-Crafts reaction of lactone in presence of supported **heteropoly** acid catalyst)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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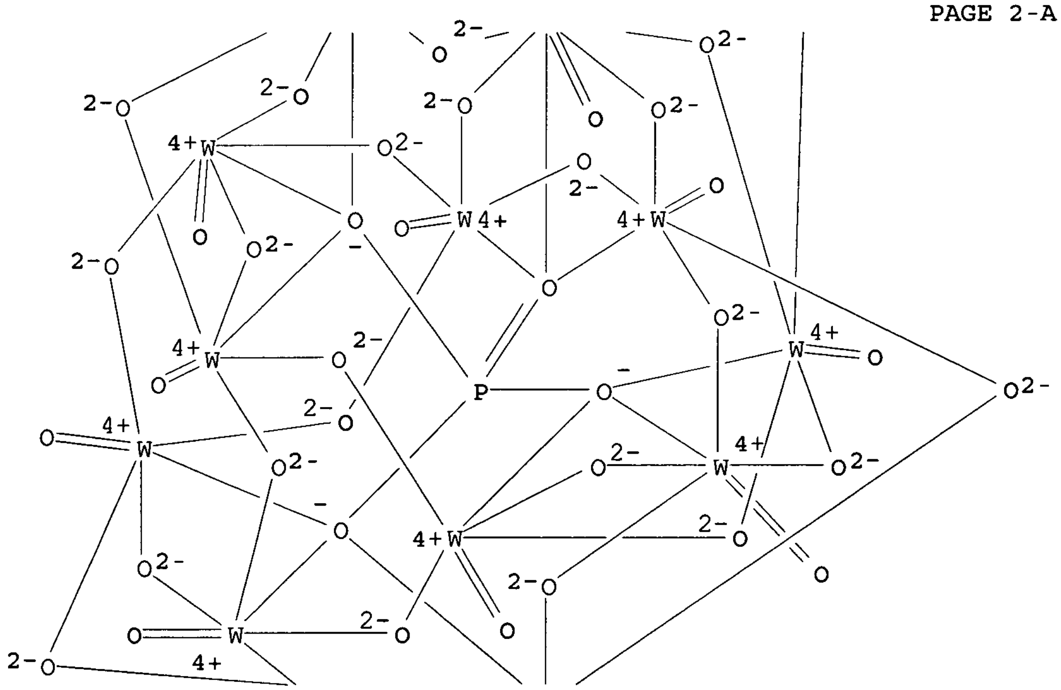

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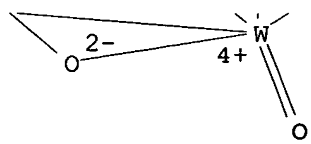


●3 H^+

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

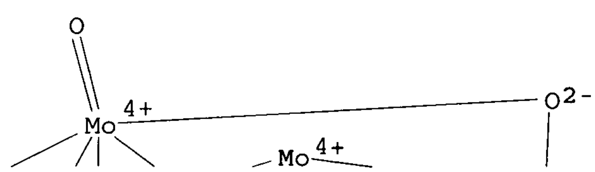
L32 ANSWER 15 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:849280 HCAPLUS
DN 140:113214
TI Selective hydrogenation of cinnamaldehyde over Raney nickel catalysts modified with salts of heteropolyacids
AU Liu, Bai-jun; Cai, Tian-xi
CS The Key Lab. Catalysis, China Natl. Petroleum Corp., Univ. Petroleum (Beijing), Changping, Beijing, 102249, Peop. Rep. China
SO Fenzi Cuihua (**2003**), 17(4), 270-273
CODEN: FECUEN; ISSN: 1001-3555
PB Kexue Chubanshe
DT Journal
LA Chinese
OS CASREACT 140:113214
AB Liquid phase selective hydrogenation of cinnamaldehyde to cinnamyl alc. on Raney nickel catalyst modified by salts (including alkali metals, alkaline earth metals, and transition metals) of heteropolyacids with Keggin type structure was studied. Effects of loading, competitive cations and heteropolyanions on catalytic activity and selectivity were examined All Raney nickel catalysts modified with salts of heteropolyacids show lower catalytic activity than unmodified Raney nickel catalysts; 12-molybdophosphates give the best selectivity among the modifiers. As far as the effect of competitive cations on catalytic properties is concerned, transition metals are better than both alkali metals and alkaline earth metals. Among the transition metal salts, Cu salt is superb in performance. A selectivity as high as 26.4% was attained when an amount of 6.3% $Cu_{1.5}PMo_{12}O_{40}$ was deposited on the Raney nickel catalyst.
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67
IT **1313-30-0** 7440-02-0, Nickel, uses **12263-08-0**
12263-10-4 **12263-11-5** **58398-88-2**
74987-91-0 **79900-09-7**
RL: **CAT (Catalyst use)**; USES (Uses)
(selective hydrogenation of cinnamaldehyde over Raney nickel catalysts modified with salts of **heteropolyacid**-s)
IT 104-55-2, Cinnamaldehyde **3251-23-8** 12026-57-2,
12-Molybdophosphoric acid 20427-59-2, Copper hydroxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(selective hydrogenation of cinnamaldehyde over Raney nickel catalysts modified with salts of heteropolyacid-s)
IT **1313-30-0** **12263-08-0** **12263-10-4**
12263-11-5 **58398-88-2** **74987-91-0**
79900-09-7
RL: **CAT (Catalyst use)**; USES (Uses)

(selective hydrogenation of cinnamaldehyde over Raney nickel catalysts modified with salts of **heteropolyacid**-s)

RN 1313-30-0 HCAPLUS

CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trisodium (9CI) (CA INDEX NAME)

PAGE 1-A



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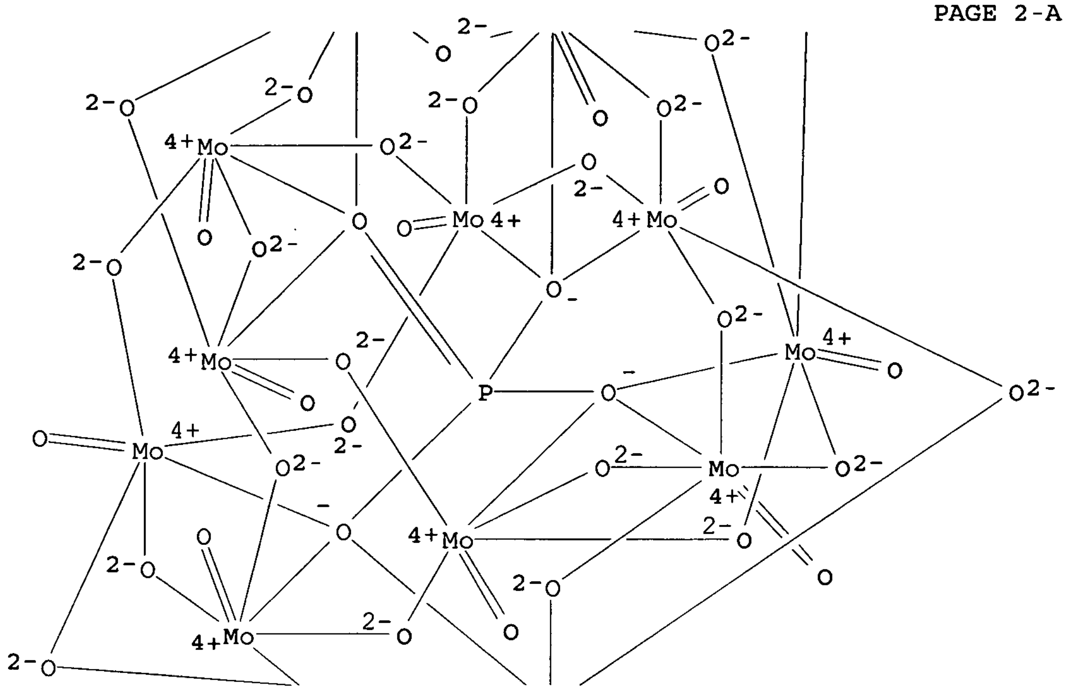

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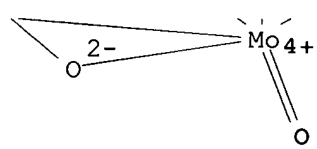
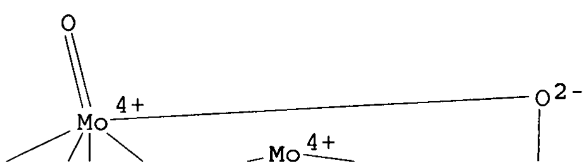


● 3 Na^+

RN 12263-08-0 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, cobalt(2+) (2:3) (9CI) (CA INDEX NAME)

PAGE 1-A



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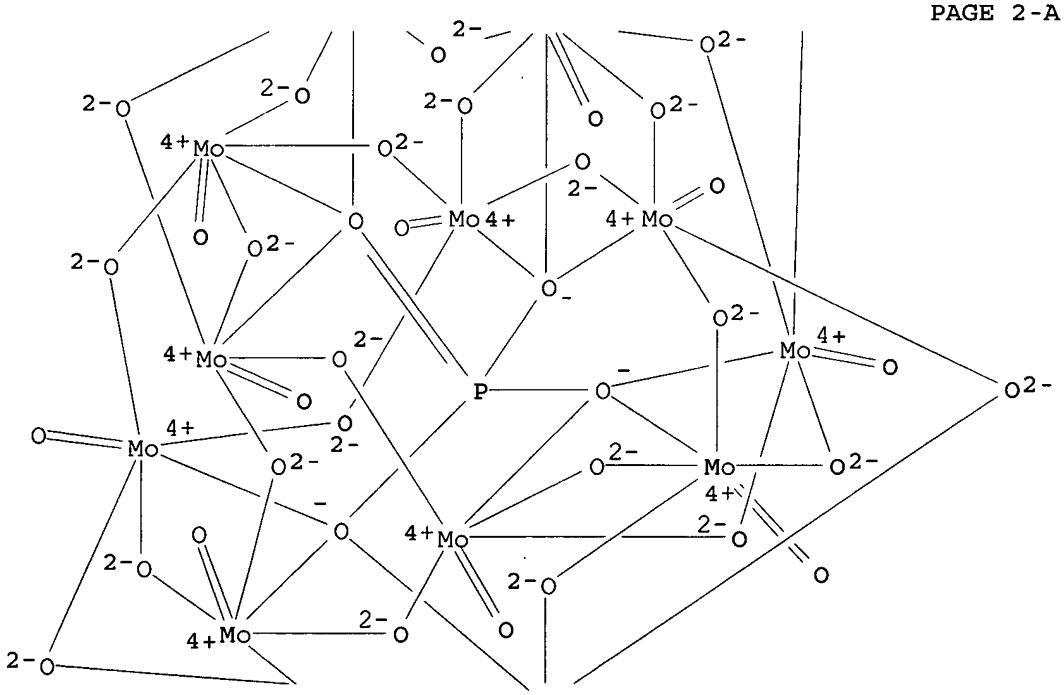
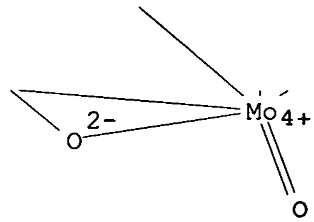




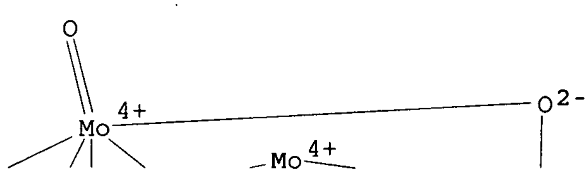
PAGE 3-A

●3/2 Co(II) $^{2+}$

RN 12263-10-4 HCAPLUS

CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, copper(2+) (2:3) (9CI) (CA INDEX NAME)

PAGE 1-A



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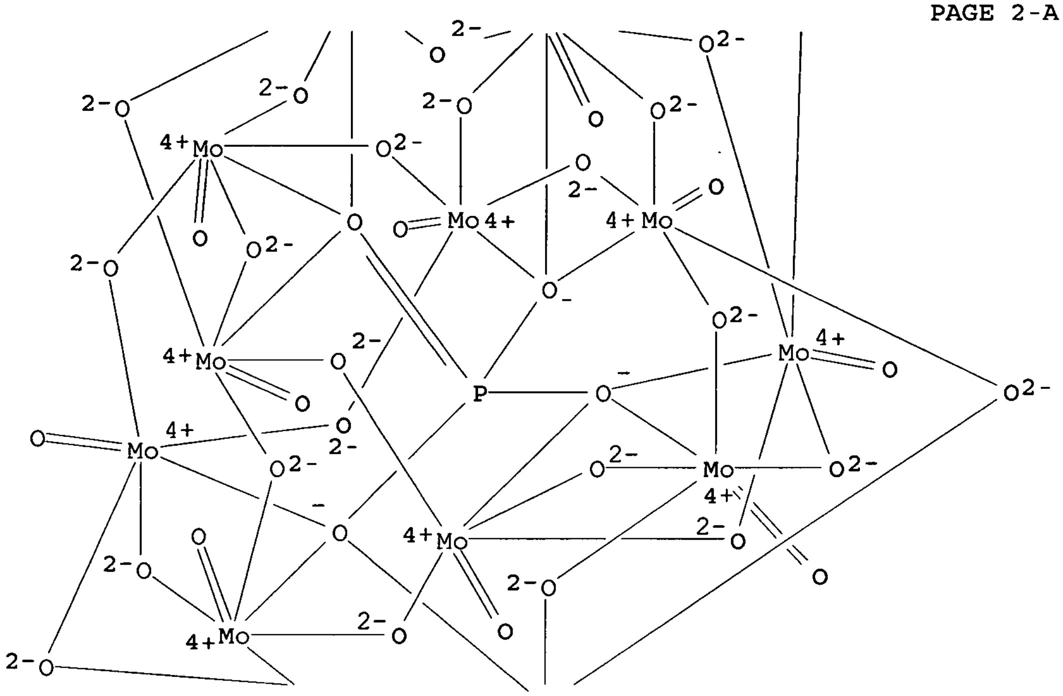

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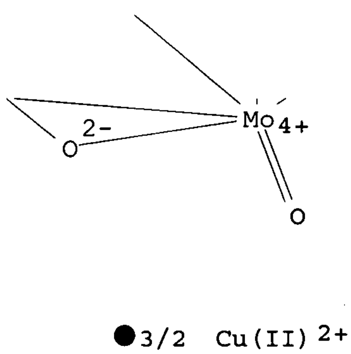
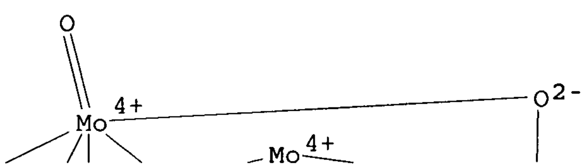


RN 12263-11-5 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, iron(3+)
(1:1) (9CI) (CA INDEX NAME)

PAGE 1-A



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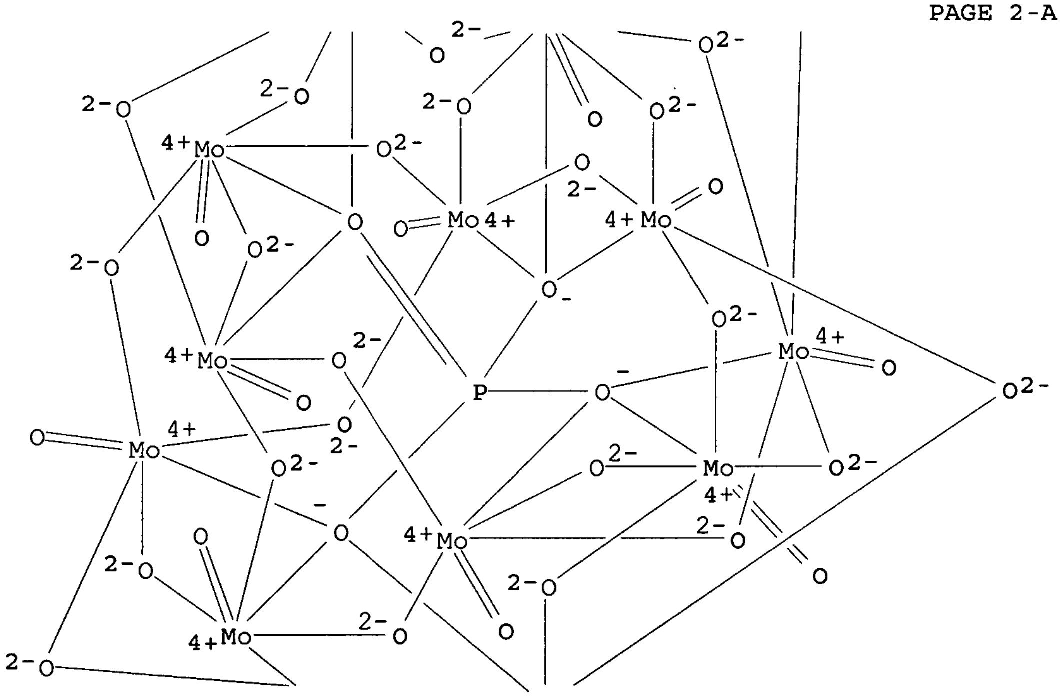
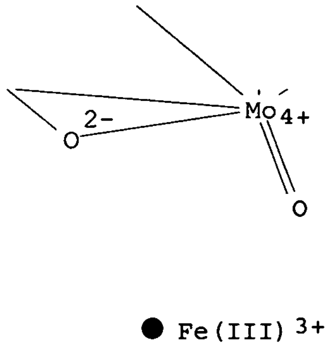
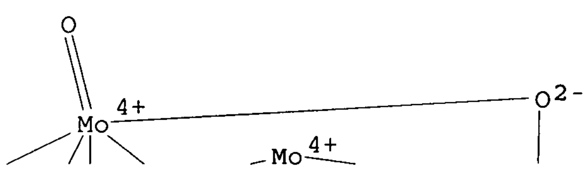




RN 58398-88-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, calcium (2:3) (9CI) (CA INDEX NAME)



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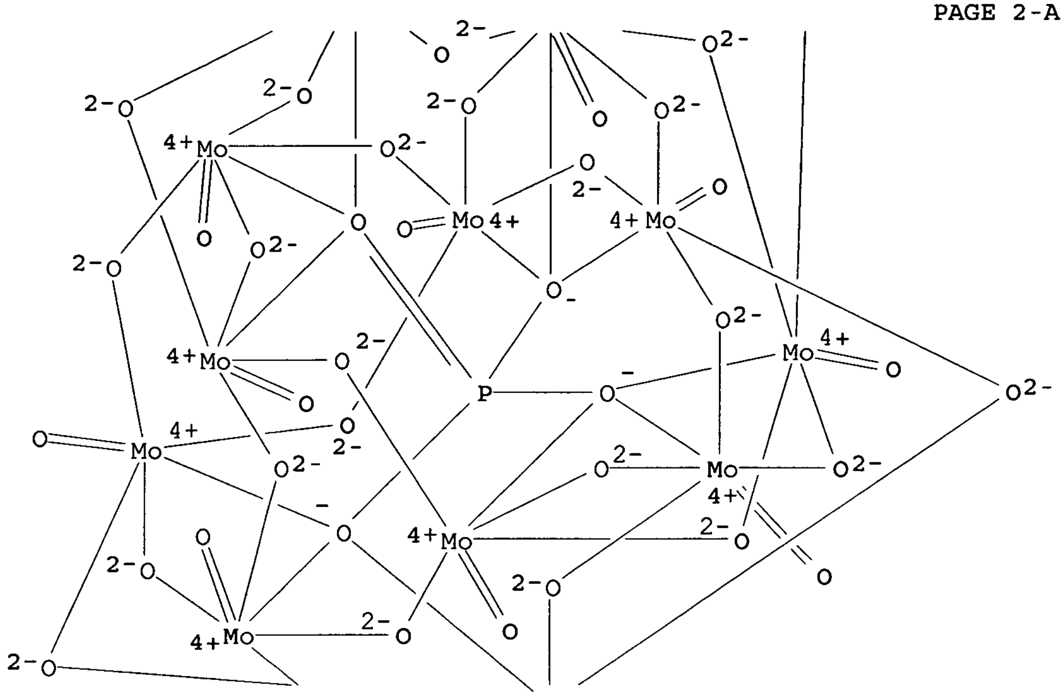

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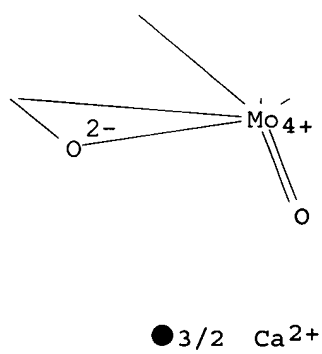
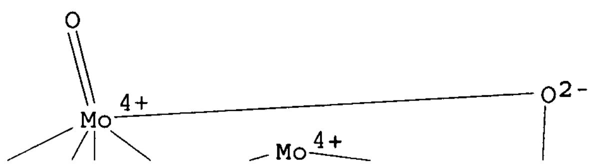


RN 74987-91-0 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, zinc (2:3)
(9CI) (CA INDEX NAME)

PAGE 1-A



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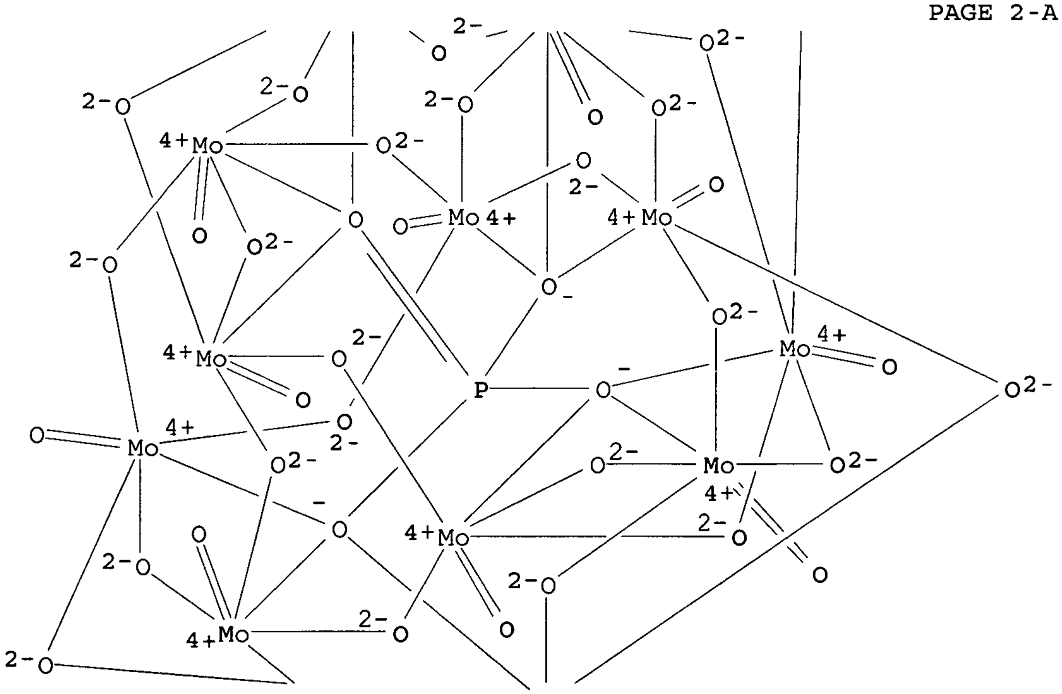

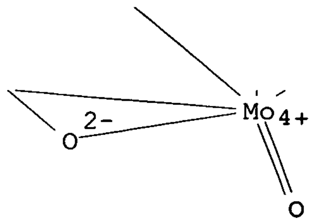

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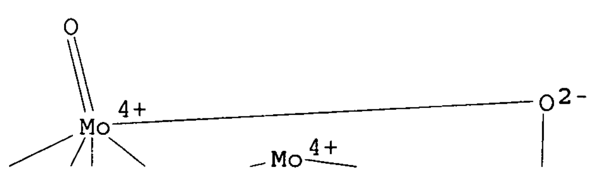
● 3/2 Zn^{2+}

RN 79900-09-7 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, chromium(3+) (1:1) (9CI) (CA INDEX NAME)

PAGE 1-A



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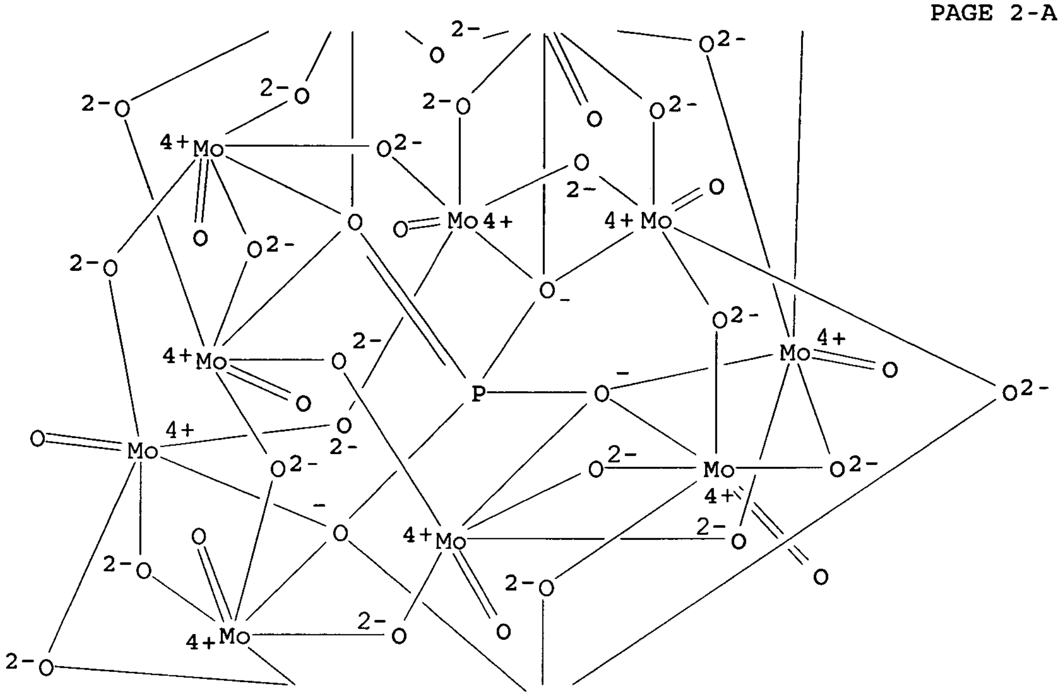

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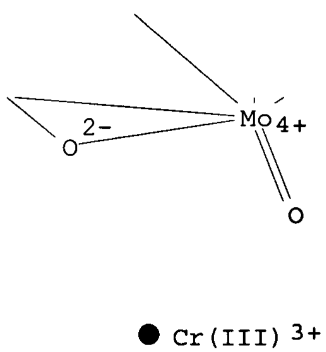
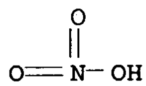


IT **3251-23-8**
RL: RCT (Reactant); RACT (Reactant or reagent)
(selective hydrogenation of cinnamaldehyde over Raney nickel catalysts modified with salts of heteropolyacid-s)
RN 3251-23-8 HCAPLUS
CN Nitric acid, copper(2+) salt (8CI, 9CI) (CA INDEX NAME)



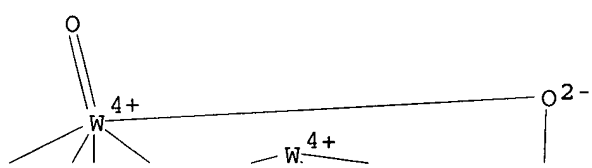
●1/2 Cu(II)

L32 ANSWER 16 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:730713 HCAPLUS
DN 140:376970
TI Hydroxylation of benzene by O2 and H2 gas mixture on catalysts containing platinum metals and heteropolycompounds
AU Kuznetsova, N. I.; Kuznetsova, L. I.; Likholobov, V. A.
CS Inst. Kataliza im. G. K. Boreskova, SO RAN, Novosibirsk, Russia
SO Kataliz v Promyshlennosti (**2003**), (4), 17-23
CODEN: KPARAU
PB ZAO "Kalvis"
DT Journal
LA Russian
OS CASREACT 140:376970
AB Gas-phase hydroxylation of benzene with a mixture of O2 and H2 proceeded over two-component catalysts based on platinum metals and heteropolar compds. has been investigated. The productivity of the catalysts related to metal quantity was found with varying qual. and quant. **composition** of the active components, silica gel carrier surface area, and temperature in the range of 180-250°C. The catalysts of optimal **composition** at the appropriate temperature produce up to 400 mol of phenol per 1 g-atom Pd or Pt per 1 h. Activity of the catalysts is associated with contact zones between platinum metal and heteropolar compound, which can be observed by electron microscopy.
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
IT 142-71-2, Copper diacetate 373-02-4, Nickel diacetate 1314-62-1, Vanadium pentoxide, uses **1343-93-7**, Tungstophosphoric acid (H3W12PO40) 7447-39-4, Copper dichloride, uses 7631-86-9, Silica, uses 7647-10-1, Palladium dichloride 12015-91-7, Potassium chlororuthenate(IV) (K2RuCl5(OH)) **12026-57-2**, Molybdophosphoric acid (H3Mo12PO40) **12293-15-1**, Molybdovanadophosphoric acid (H4Mo11PVO40) **12293-21-9**, Molybdovanadophosphoric acid (H5Mo10V2PO40) **12293-24-2**, Phosphomolybdovanadic acid (H6PMo9V3O40) **12398-73-1**, Tungstovanadophosphoric acid (H4PW11VO40) **12411-60-8**, Molybdotungstophosphoric acid (H3Mo6PW6O40) **12786-62-8**, Tungstovanadophosphoric acid (H6PW9V3O40) 16941-12-1, Platinic chloride 36732-55-5, Chloroiridic(III) acid (H3IrCl6) **146066-47-9**, Tungstozirconaphosphoric acid (H5PW11ZrO40) 667419-85-4, Rhodium, trichlorotrihydroxy-, trihydrogen
RL: **CAT (Catalyst use)**; USES (Uses)
(hydroxylation of benzene by O2 and H2 gas mixture on catalysts containing platinum metals and **heteropolycompounds**)
IT **1343-93-7**, Tungstophosphoric acid (H3W12PO40) **12026-57-2**
, Molybdophosphoric acid (H3Mo12PO40) **12293-15-1**,
Molybdovanadophosphoric acid (H4Mo11PVO40) **12293-21-9**,
Molybdovanadophosphoric acid (H5Mo10V2PO40) **12293-24-2**,
Phosphomolybdovanadic acid (H6PMo9V3O40) **12398-73-1**,
Tungstovanadophosphoric acid (H4PW11VO40) **12411-60-8**,
Molybdotungstophosphoric acid (H3Mo6PW6O40) **12786-62-8**,

Tungstovanadophosphoric acid ($H6PW9V3O40$) **146066-47-9**,
Tungstozirconaphosphoric acid ($H5PW11ZrO40$)
RL: **CAT (Catalyst use)**; USES (Uses)
(hydroxylation of benzene by O2 and H2 gas mixture on catalysts containing platinum metals and **heteropolycompounds**)

RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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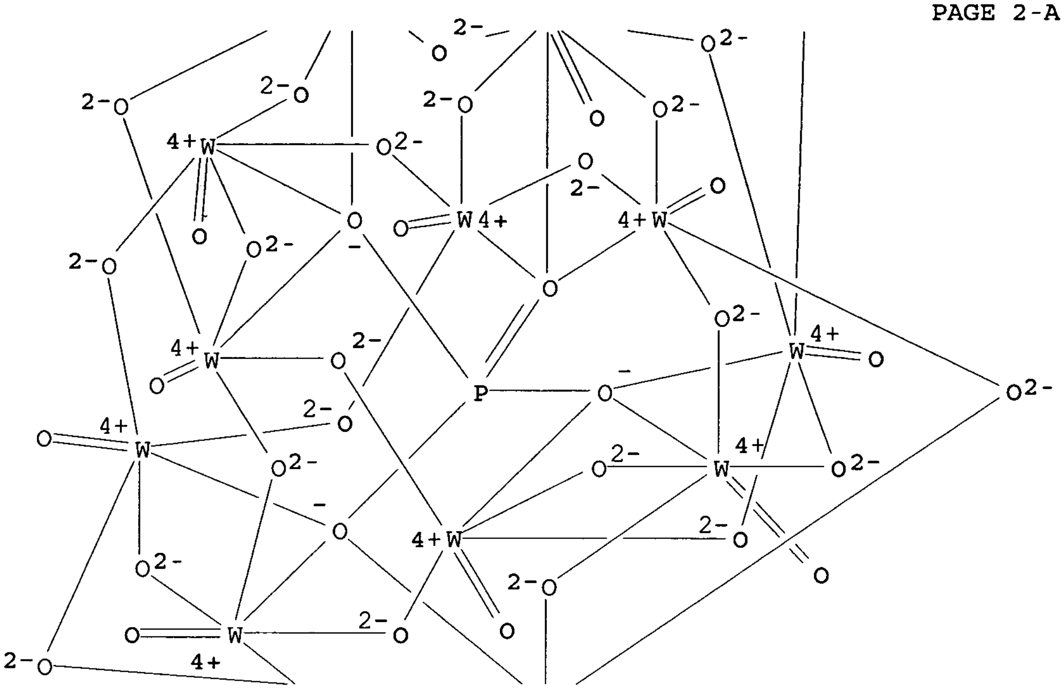

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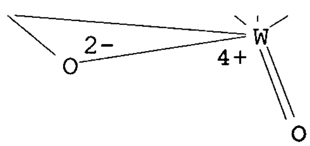
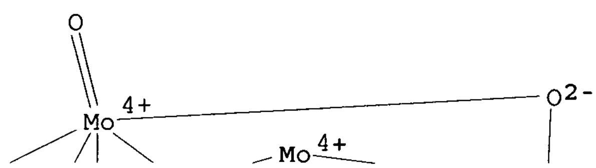


● 3 H^+

RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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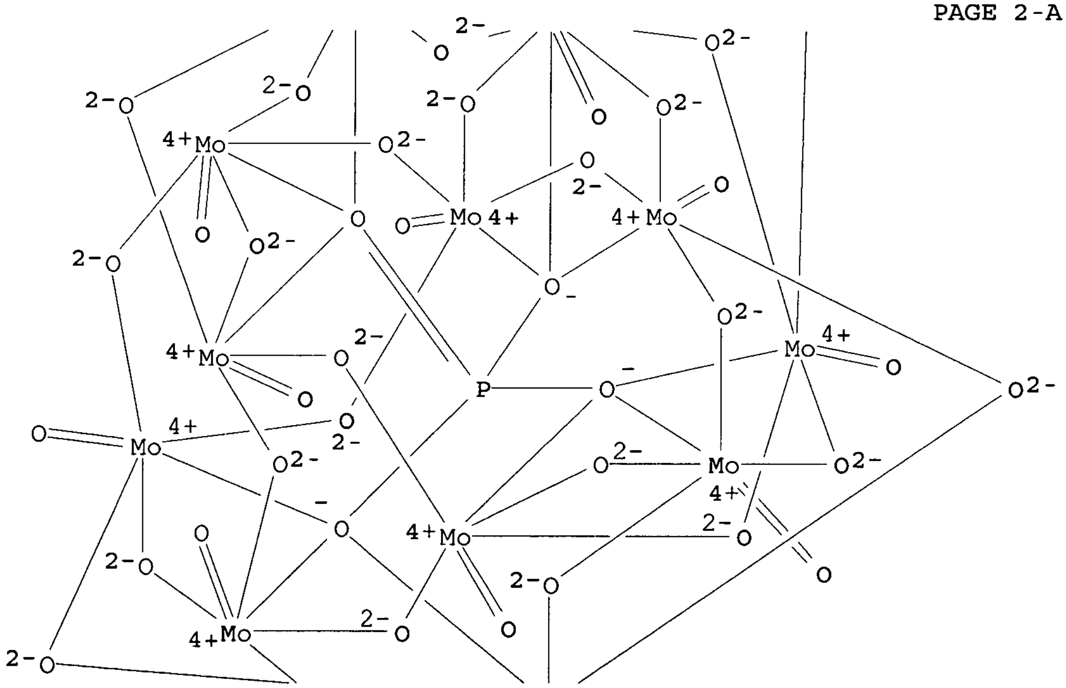

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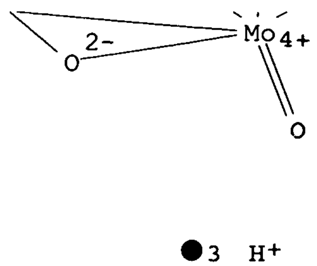
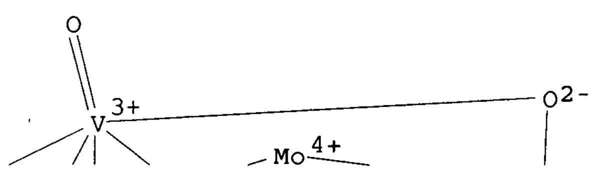


RN 12293-15-1 HCAPLUS
CN Vanadate(4-), (eicosa-μ-oxoundecaoxoundecamolybdate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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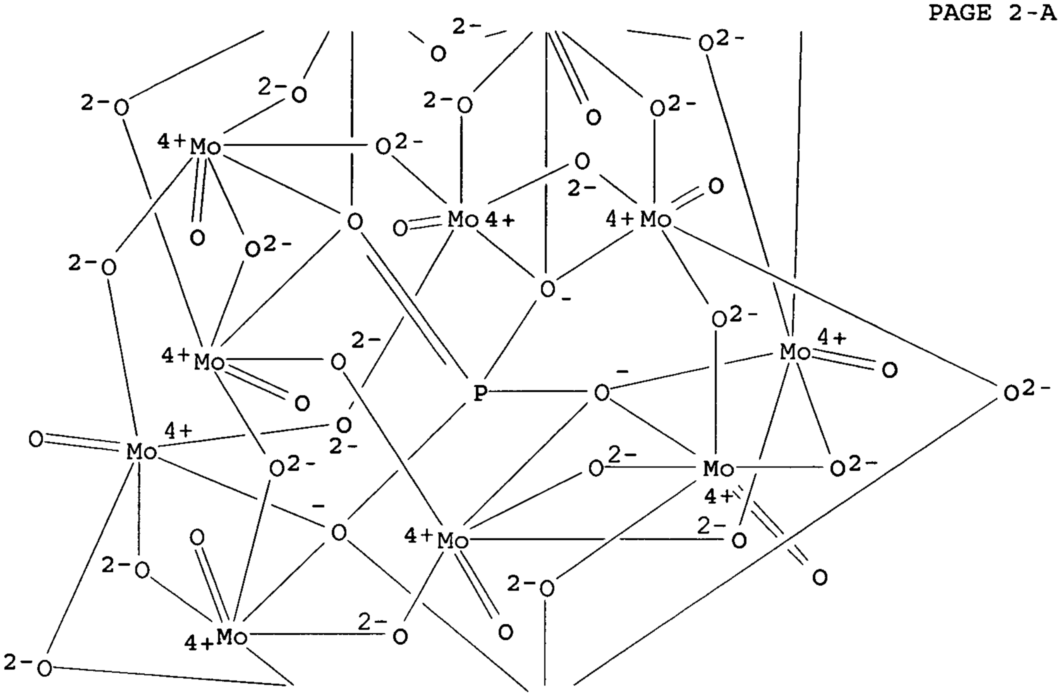

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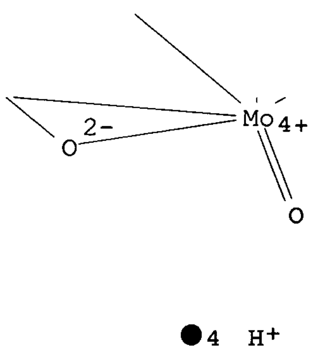
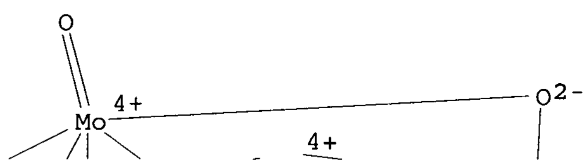


RN 12293-21-9 HCAPLUS
CN Vanadate(5-), (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]di-, pentahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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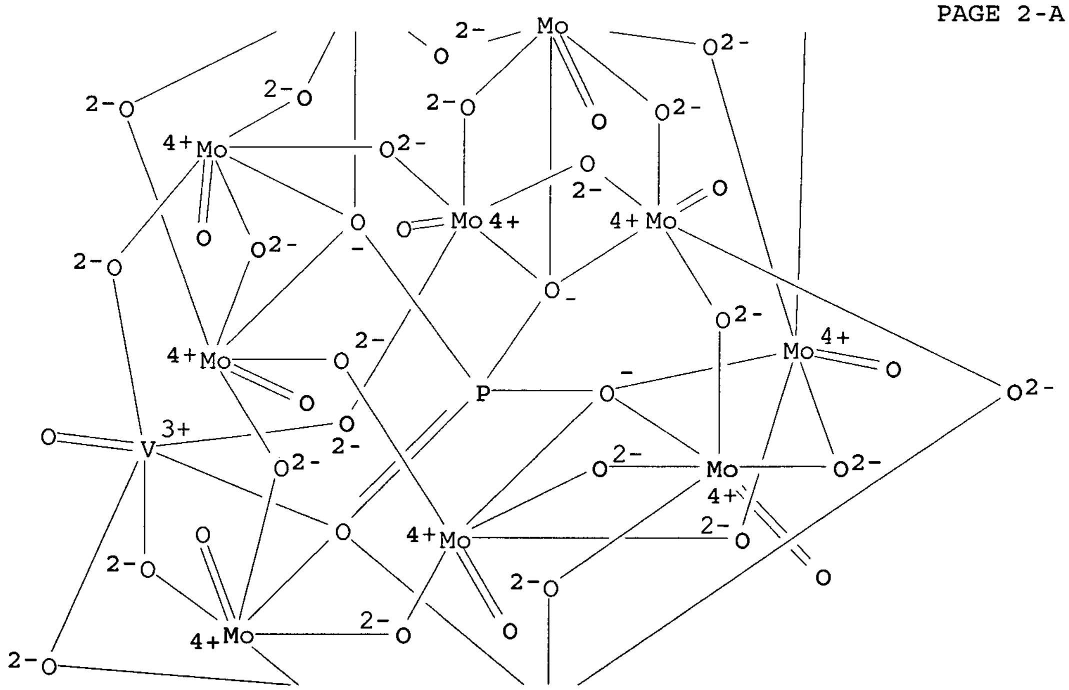

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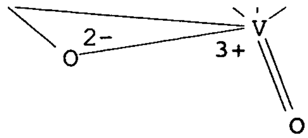
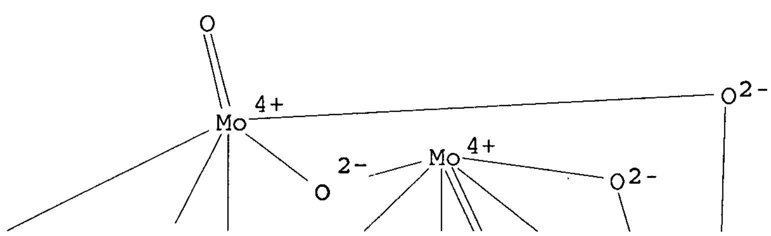


●5 H+

RN 12293-24-2 HCAPLUS
CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxononaoxononamolybdate)[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tri-, hexahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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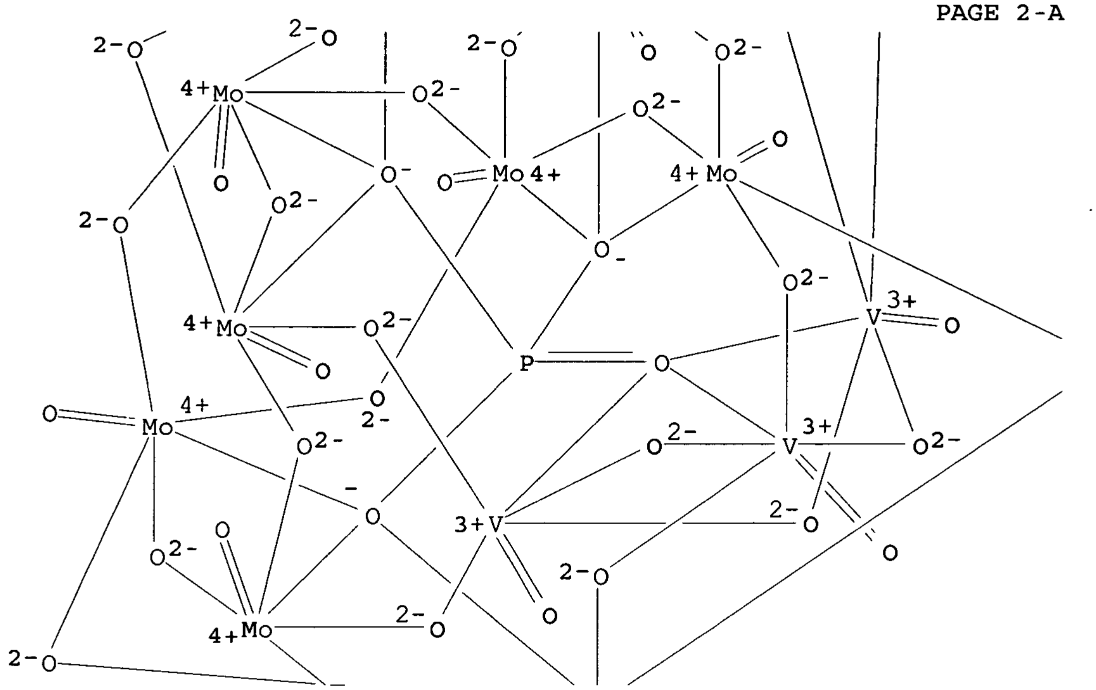

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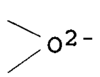

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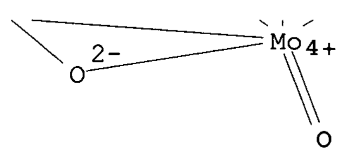
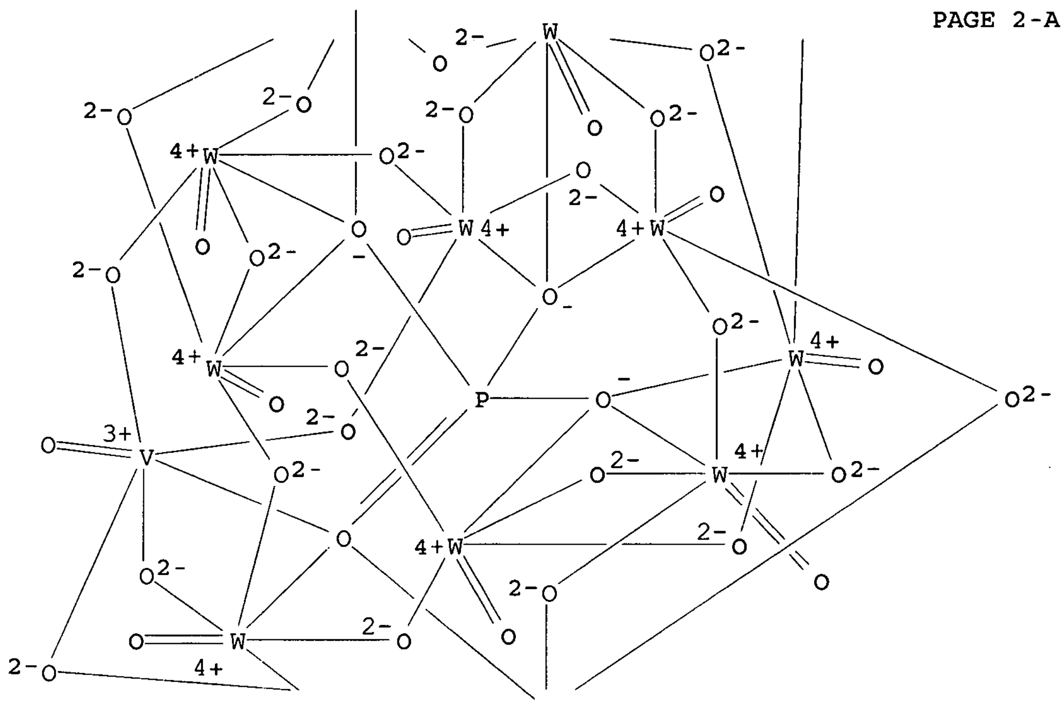


●6 H^+

RN 12398-73-1 HCAPLUS
CN Vanadate(4-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



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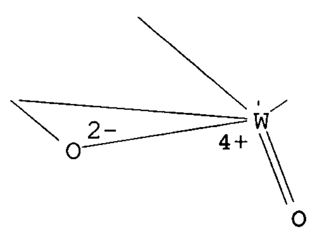
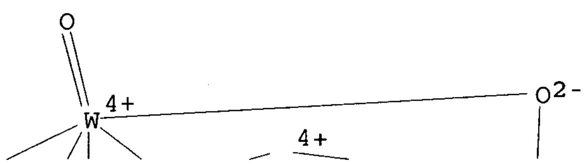


●4 H^+

RN 12411-60-8 HCAPLUS
CN Tungstate(3-), (octa-μ-oxohexaoxohexamolybdate)hexadeca-μ-oxohexaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]hexa-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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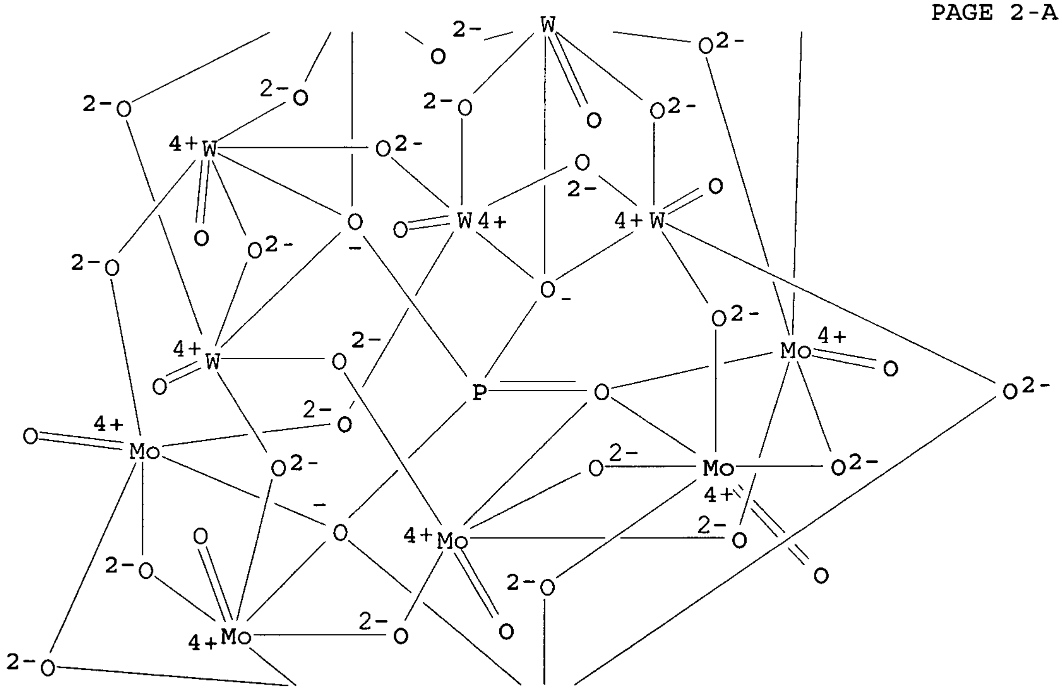

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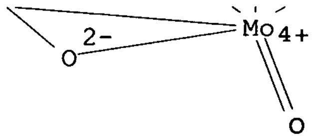
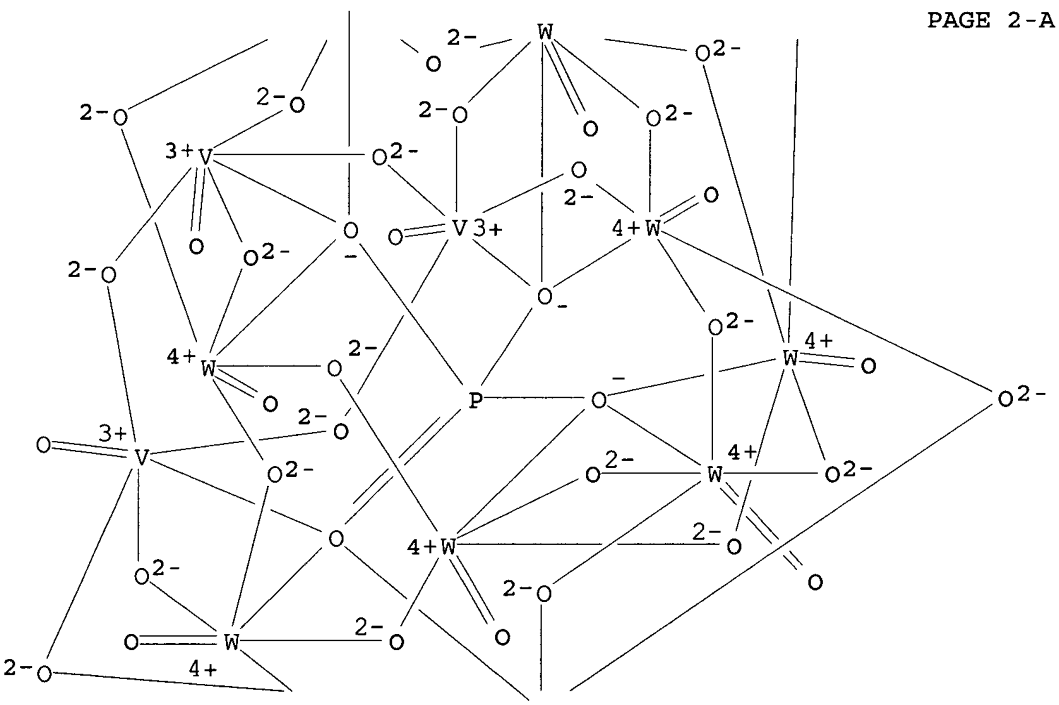
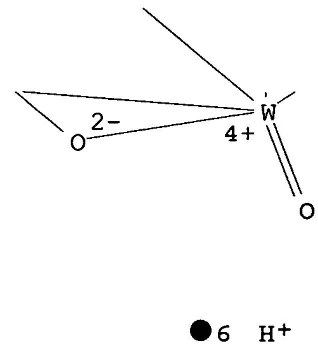


RN 12786-62-8 HCAPLUS
CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxononaoxononatungstate)[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]tri-, hexahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A





RN 146066-47-9 HCAPLUS
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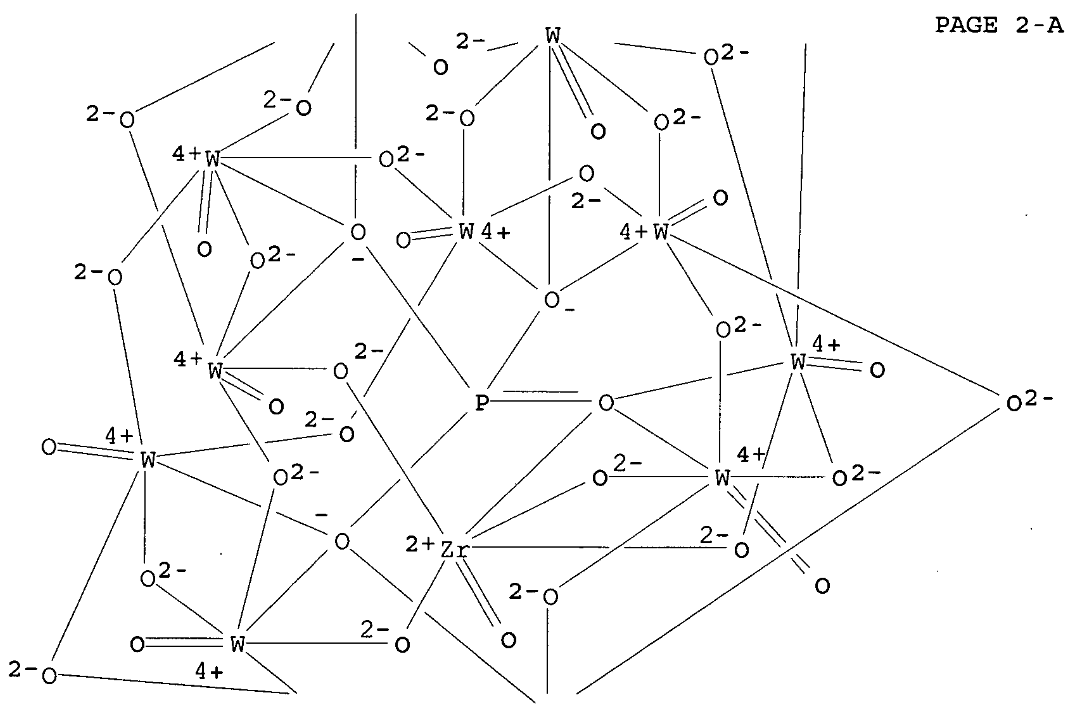
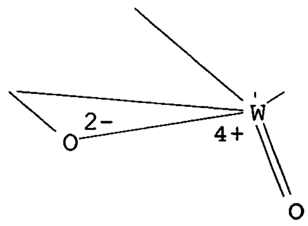
* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *





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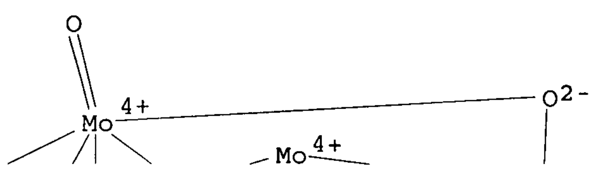
●5 H+

L32 ANSWER 17 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:698033 HCAPLUS
DN 140:217302
TI Oxidation of hydrocarbons by dioxygen reductively activated on platinum and heteropoly compounds
AU Kuznetsova, N. I.; Kirillova, N. V.; Kuznetsova, L. I.; Likholobov, V. A.
CS Boreskov Institute of Catalysis, Novosibirsk, 630090, Russia
SO Journal of Molecular Catalysis A: Chemical (**2003**), 204-205, 591-597
CODEN: JMCCF2; ISSN: 1381-1169
PB Elsevier Science B.V.
DT Journal
LA English
OS CASREACT 140:217302
AB Based on Pt and heteropoly compds. (HPC), catalysts are applied to liquid-phase oxidation of cyclohexane and cyclohexene with a mixture of O2 and H2 gases. Platinum catalyst in the presence of PW11 and PW11Fe HPC represent the most active catalytic systems for alkene oxidation, whereas highest reactivity of cyclohexane was exhibited in the presence of PMo12 HPC. Activity of the catalytic systems and **composition** of the oxygenated products are controlled by the nature of active intermediates generated under the action of the different HPC.
CC 24-5 (Alicyclic Compounds)
IT 7440-06-4, Platinum, uses **12026-57-2 12293-15-1 12293-21-9 12293-24-2 12398-73-1 12786-62-8 53749-36-3 53749-37-4 104484-97-1 134360-58-0** 135480-92-1 144740-01-2 144740-03-4 144740-04-5 **144839-08-7** 145238-80-8 **146066-47-9 200558-44-7**
RL: **CAT (Catalyst use)**; USES (Uses)
(oxidation of cyclohexane and cyclohexene by dioxygen reductively activated on platinum and **heteropoly** compds.)
IT **12411-60-8P**
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(oxidation of cyclohexane and cyclohexene by dioxygen reductively activated on platinum and **heteropoly** compds.)
IT **12026-57-2 12293-15-1 12293-21-9 12293-24-2 12398-73-1 12786-62-8 53749-36-3 53749-37-4 104484-97-1 134360-58-0 144839-08-7 146066-47-9 200558-44-7**
RL: **CAT (Catalyst use)**; USES (Uses)
(oxidation of cyclohexane and cyclohexene by dioxygen reductively

activated on platinum and **heteropoly** compds.)
RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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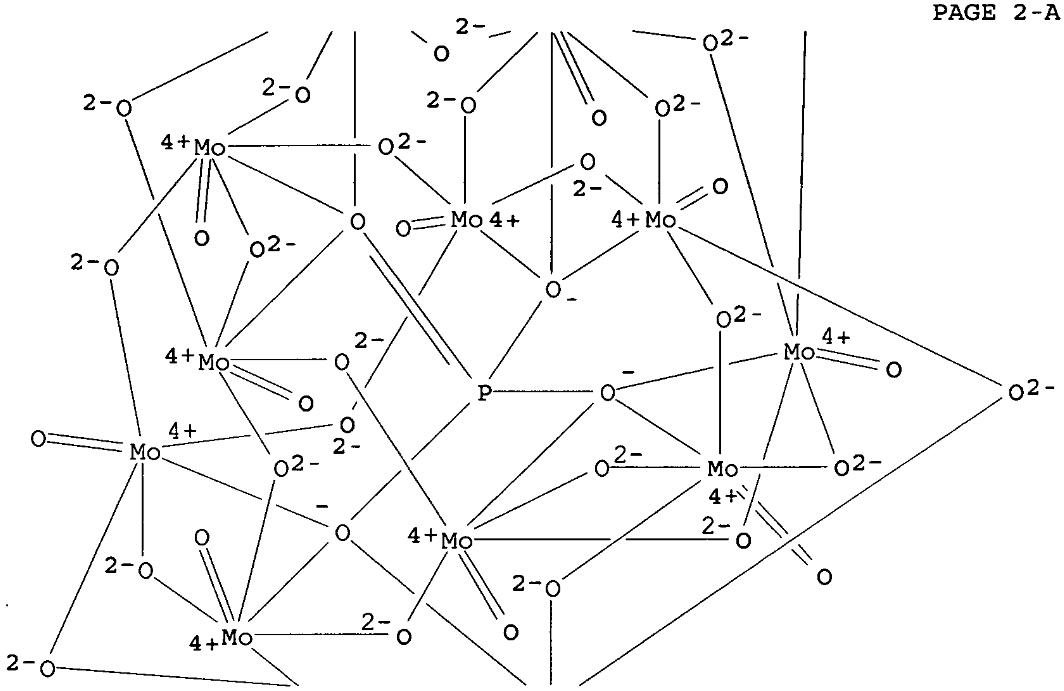

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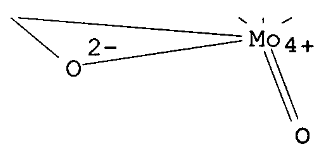
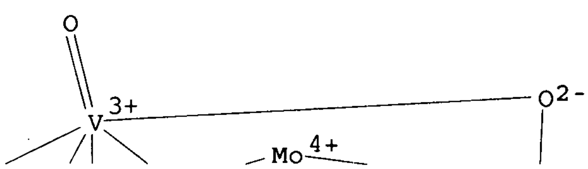


●3 H^+

RN 12293-15-1 HCAPLUS
CN Vanadate(4-), (eicosa-μ-oxoundecaoxoundecamolybdate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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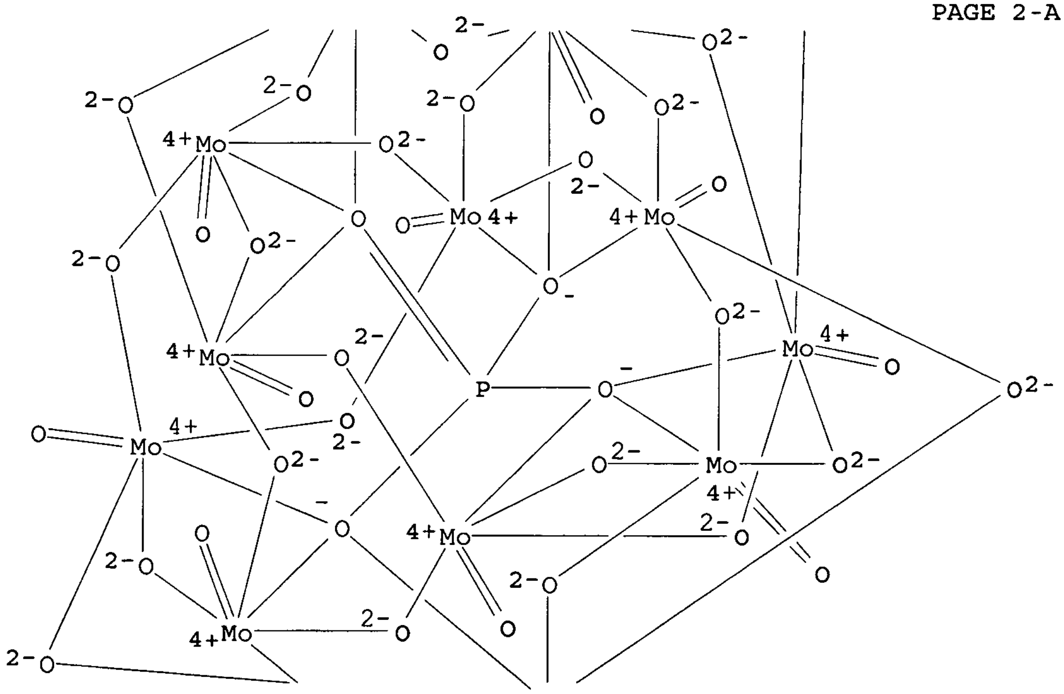
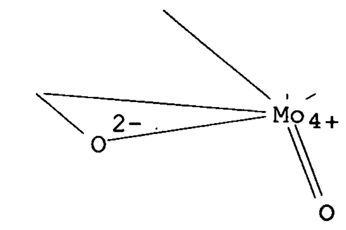


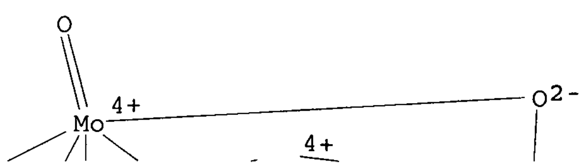


PAGE 3-A

●4 H+

RN 12293-21-9 HCAPLUS
CN Vanadate(5-), (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]di-, pentahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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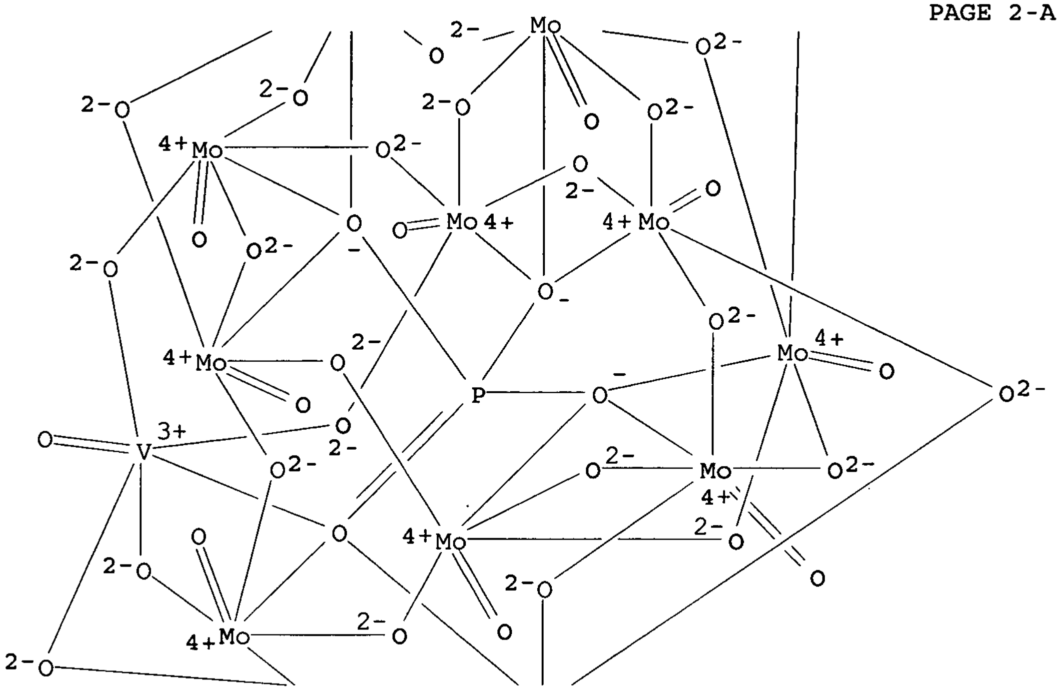

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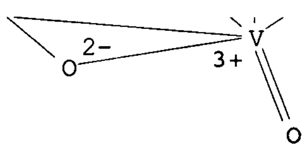
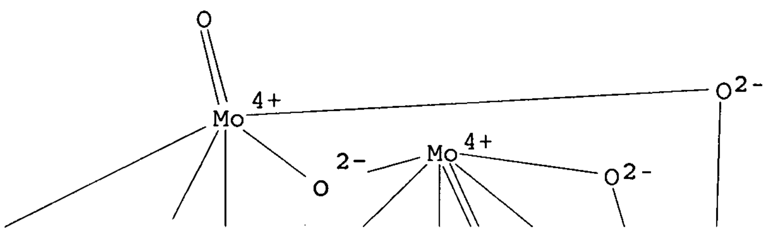


● 5 H+

RN 12293-24-2 HCAPLUS

CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxononaoxononamolybdate)[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tri-, hexahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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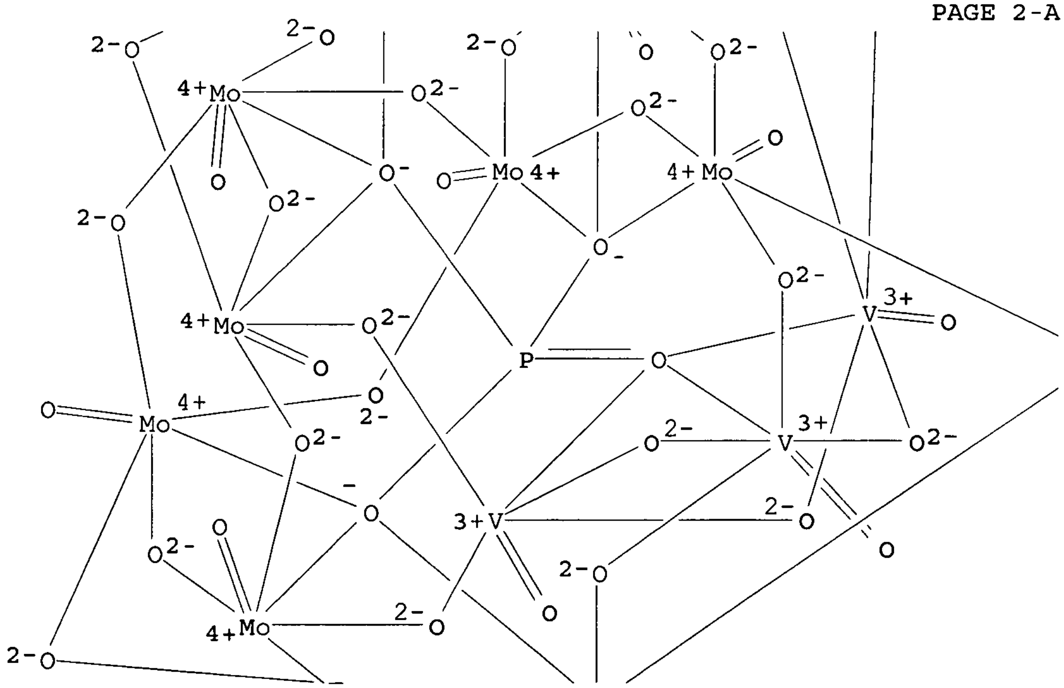

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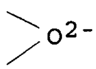

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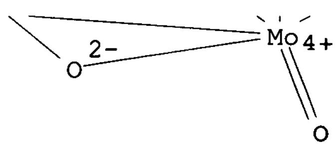
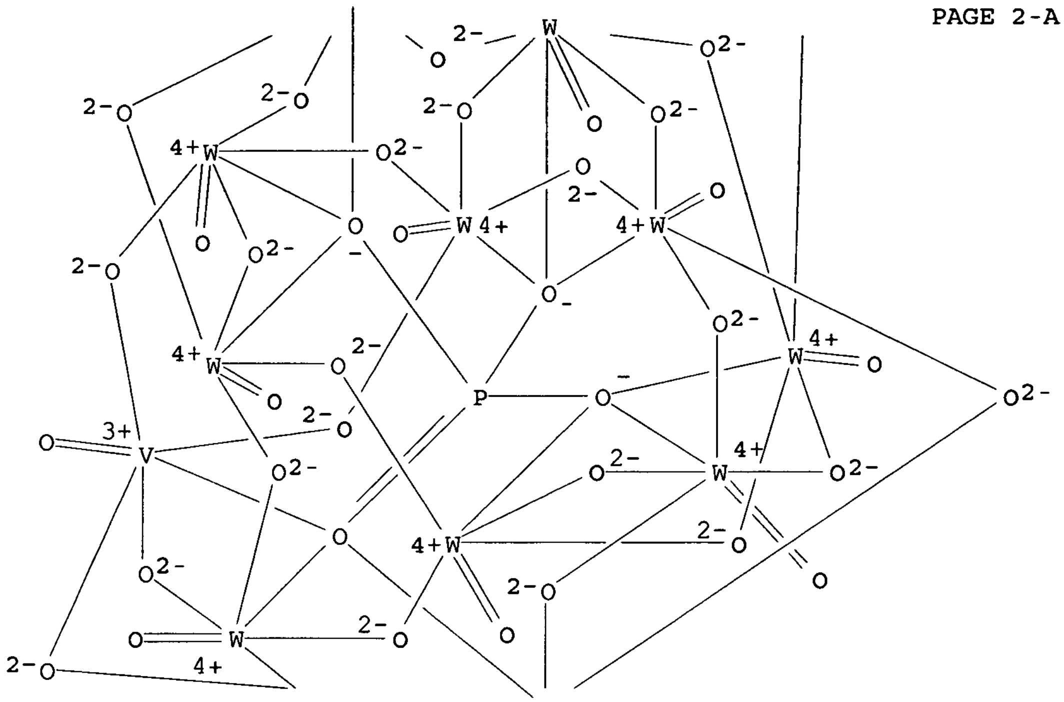


● 6 H^+

RN 12398-73-1 HCAPLUS
CN Vanadate(4-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



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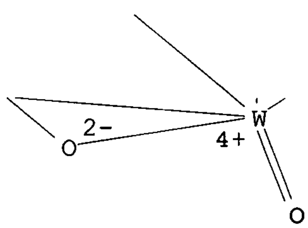
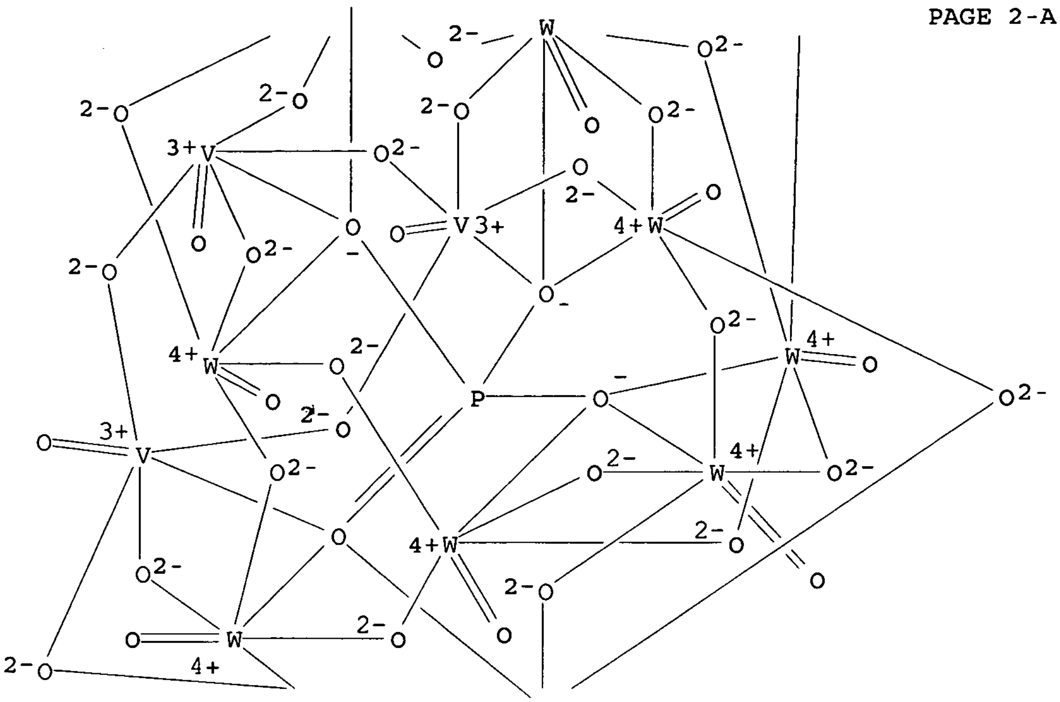


● 4 H^+

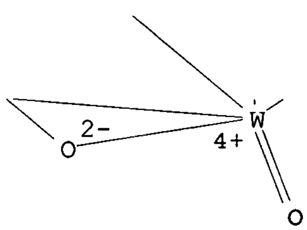
RN 12786-62-8 HCAPLUS
CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxononaoxononatungstate)[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tri-, hexahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



PAGE 3-A



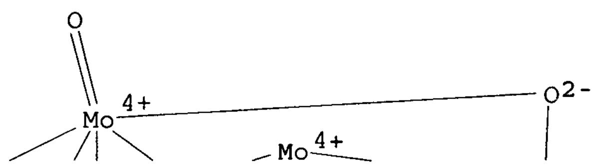
● 6 H^+

RN 53749-36-3 HCAPLUS
CN 1-Butanaminium, N,N,N-tributyl-, tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':.kappa.O'':κO'':κO'':κO''':κO''':κO''']]dodecamolybdate(3-) (3:1) (9CI) (CA INDEX NAME)

CM 1

CRN 12379-13-4
CMF Mo12 O40 P
CCI CCS

PAGE 1-A



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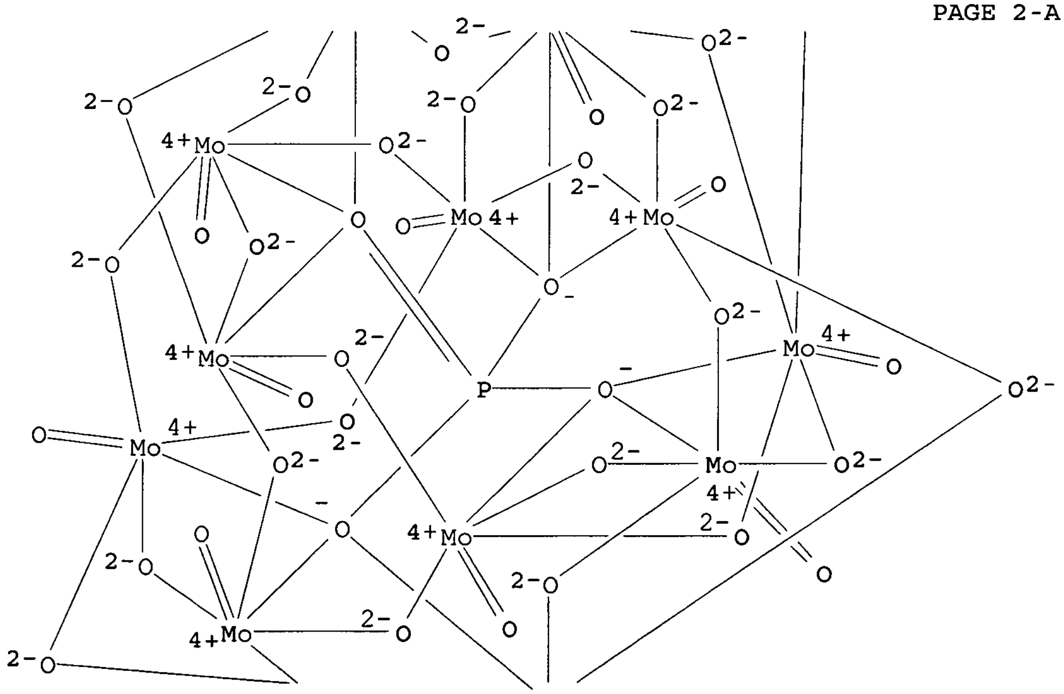

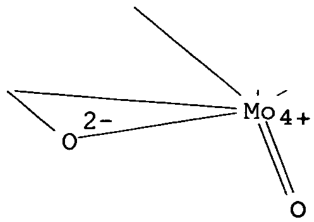

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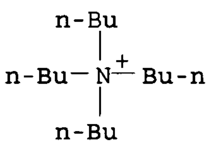
CM 2

CRN 10549-76-5
CMF C16 H36 N

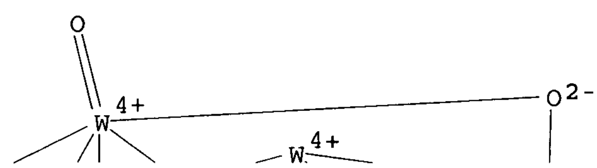


RN 53749-37-4 HCAPLUS
CN 1-Butanaminium, N,N,N-tributyl-, tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':.kappa.O'':κO'':κO'':κO''':κO''':κO''']]dodecatungstate(3-) (3:1) (9CI) (CA INDEX NAME)

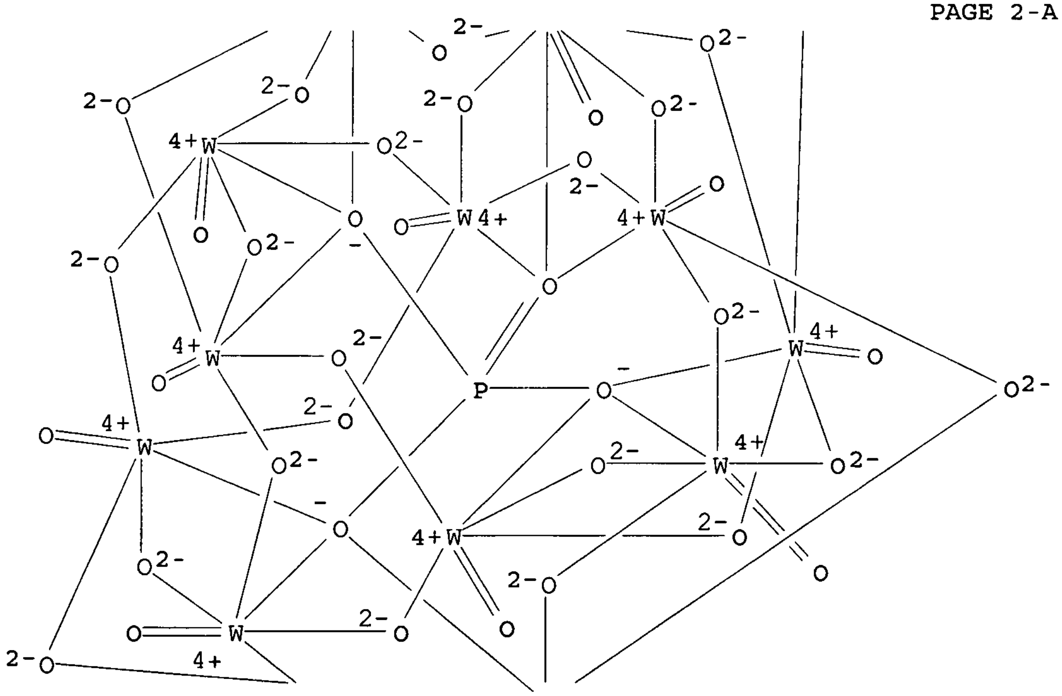
CM 1

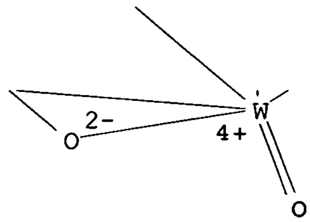
CRN 12534-77-9
CMF O40 P W12
CCI CCS

PAGE 1-A



PAGE 2-A





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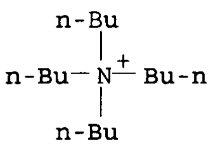
CM 2

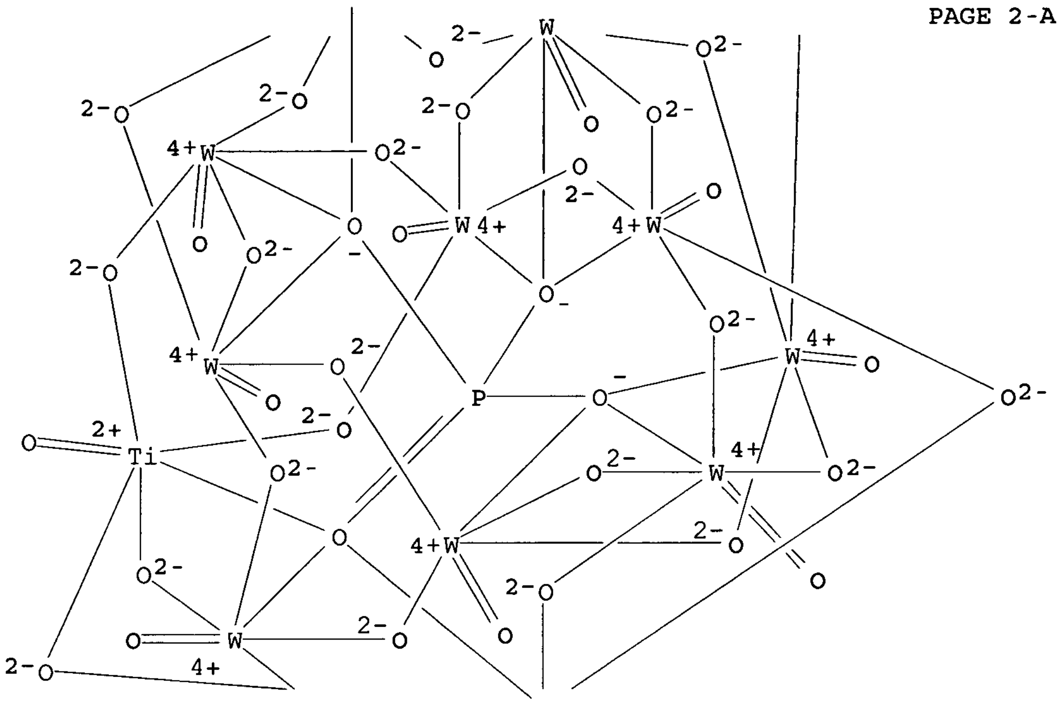
CRN 10549-76-5
CMF C16 H36 N



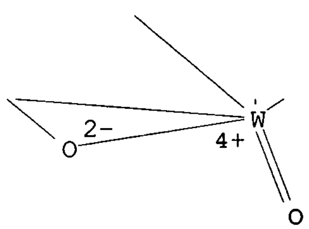
RN 104484-97-1 HCAPLUS
CN Titanate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, pentahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



PAGE 3-A



● 5 H^+

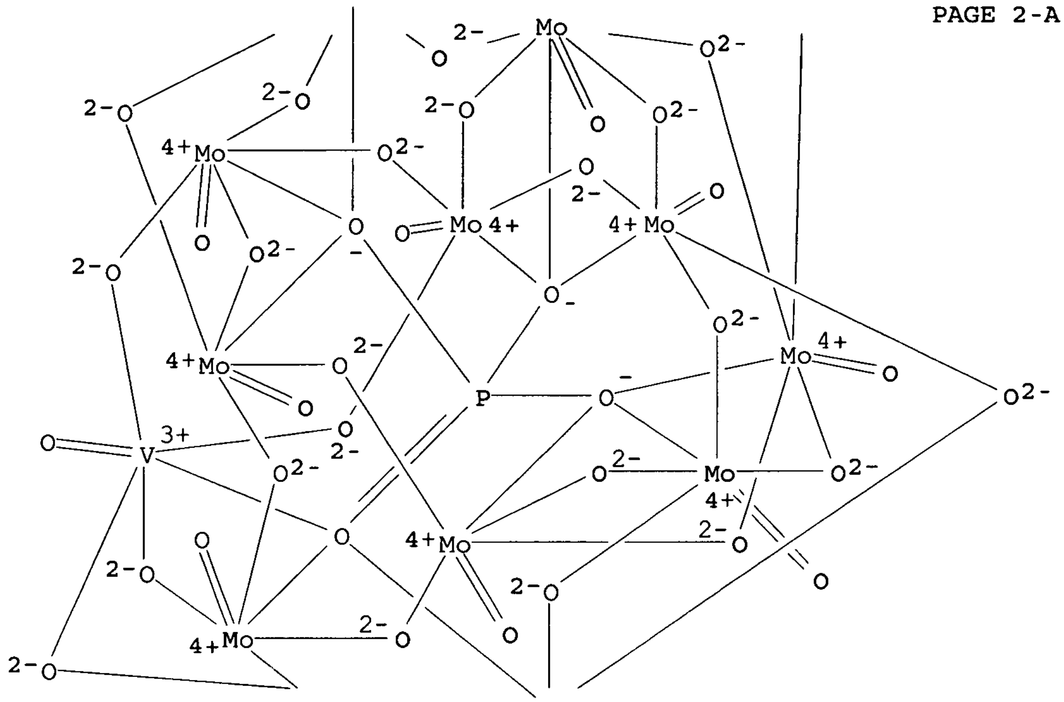
RN 134360-58-0 HCAPLUS
CN 1-Butanaminium, N,N,N-tributyl-, (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]divanadate(5-) (5:1) (9CI) (CA INDEX NAME)

CM 1

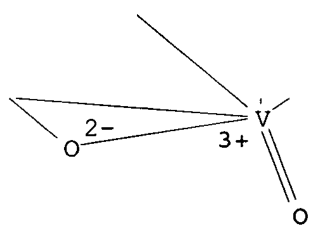
CRN 58071-93-5
CMF Mo10 O40 P V2
CCI CCS

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A

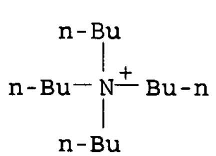


PAGE 3-A



CM 2

CRN 10549-76-5
CMF C16 H36 N



RN 144839-08-7 HCAPLUS
CN 1-Butanaminium, N,N,N-tributyl-, (aquachromate)tetracosa-μ-oxoundecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.k

appa.O':κO':κO'':κO'':κO'':κO''':κO'''
:κO''']]undecatungstate(4-) (4:1) (9CI) (CA INDEX NAME)

CM 1

CRN 144839-07-6
CMF Cr H2 O40 P W11
CCI CCS

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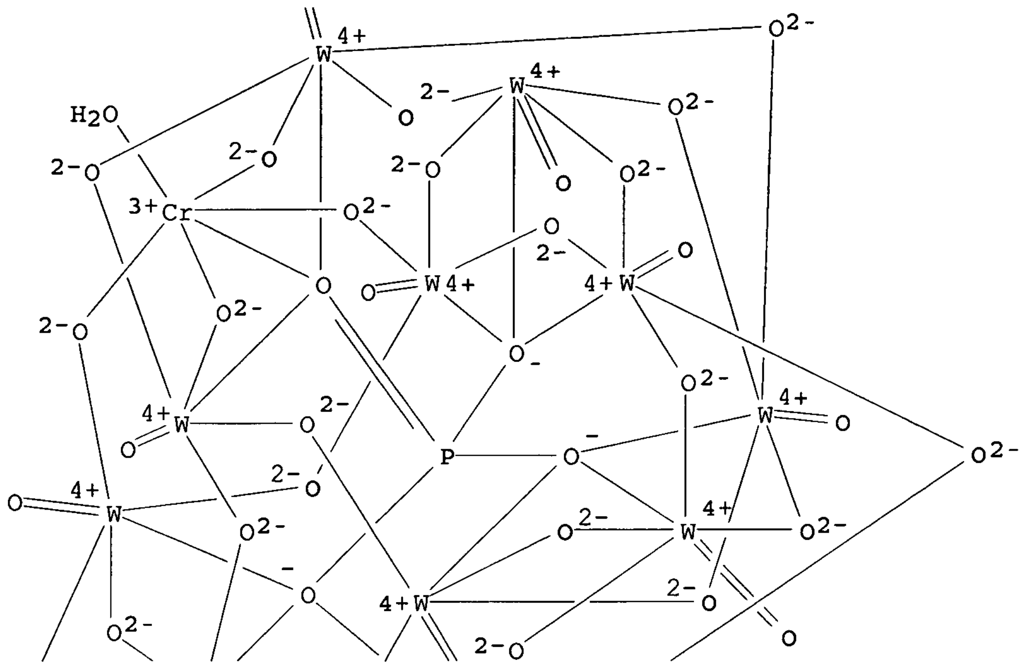

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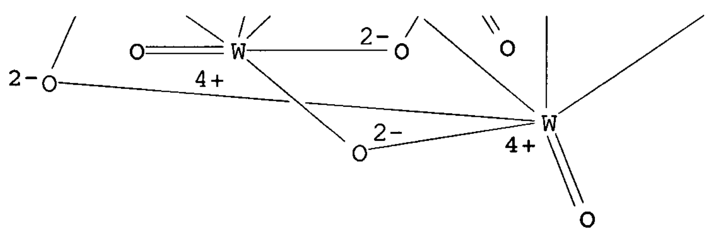
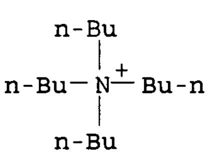


CM 2

CRN 10549-76-5
CMF C16 H36 N

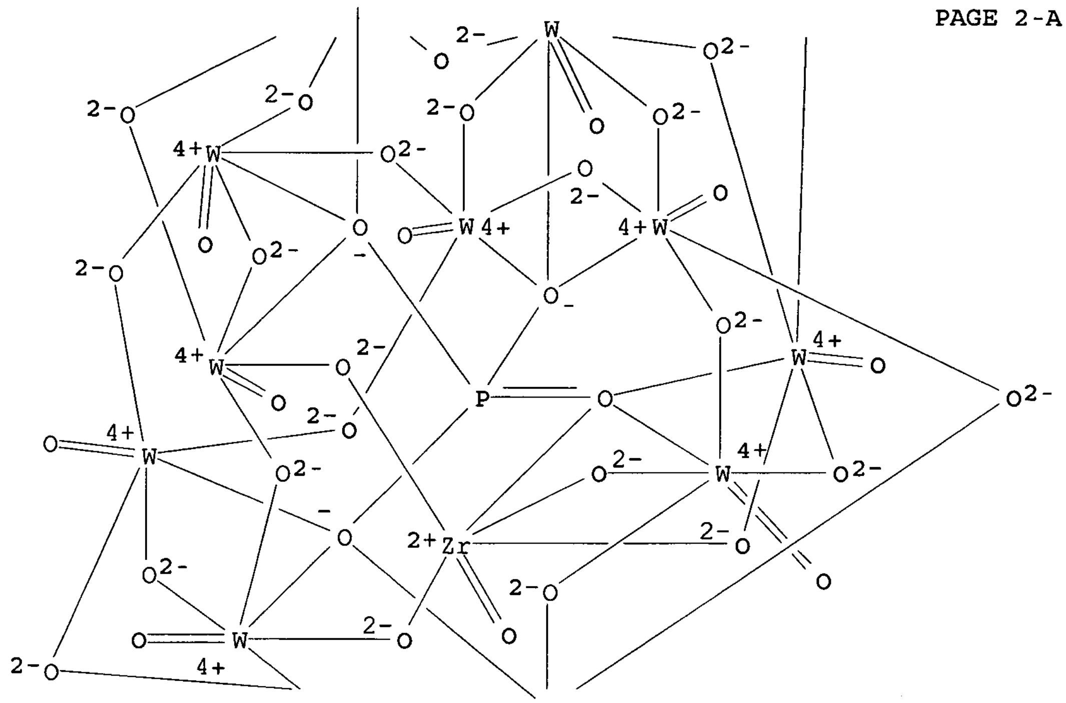


RN 146066-47-9 HCAPLUS
CN Zirconate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':κO''':.kapp

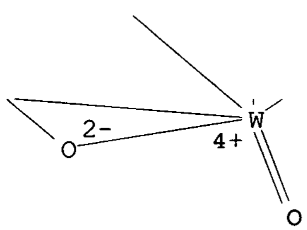
a.O''']]-, pentahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



PAGE 3-A



●5 H^+

RN 200558-44-7 HCAPLUS
CN 1-Butanaminium, N,N,N-tributyl-, (eicosa-μ-oxoundecaoxoundecamolybdate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]vanadate(4-) (4:1) (9CI) (CA INDEX NAME)

CM 1

CRN 54578-48-2
CMF Mo11 O40 P V
CCI CCS

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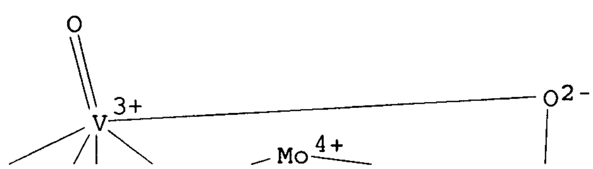

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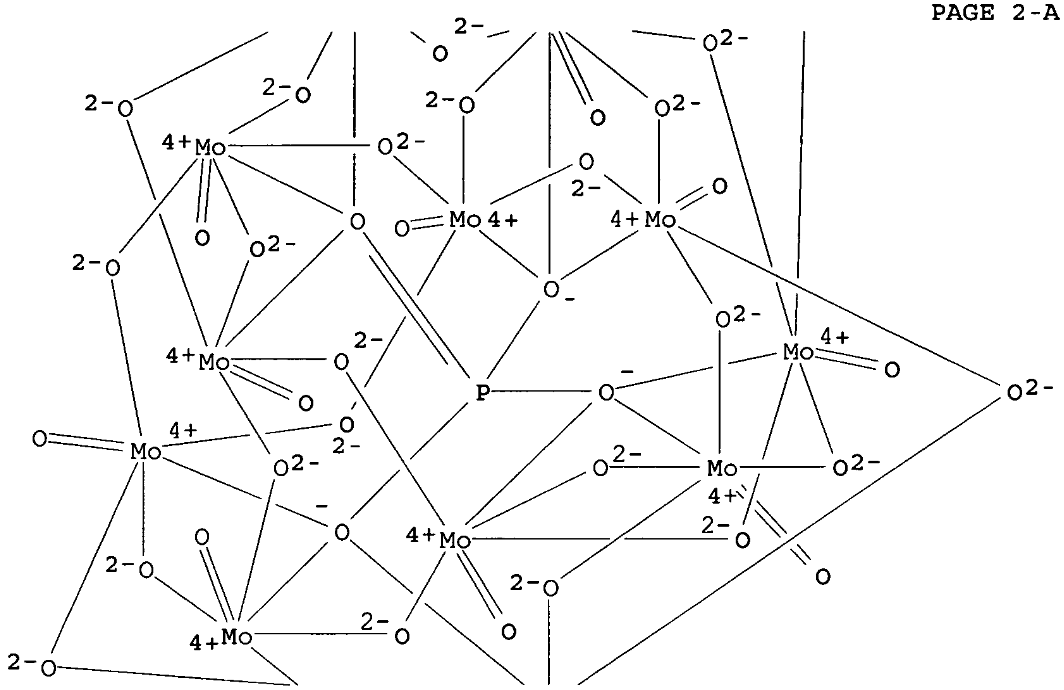

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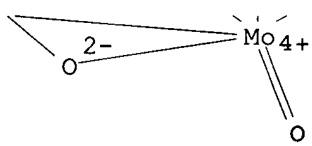
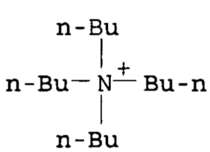


CM 2

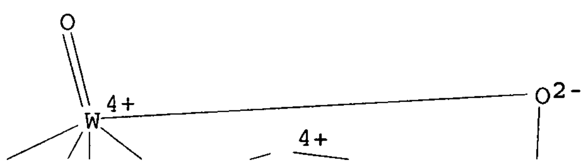
CRN 10549-76-5
CMF C16 H36 N



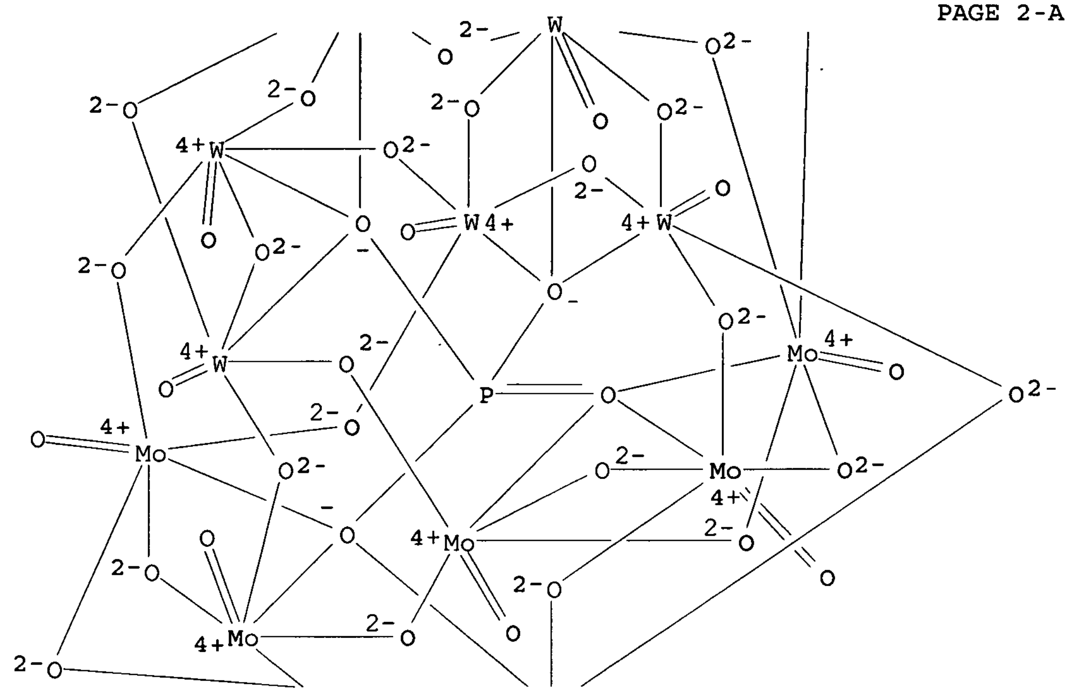
IT **12411-60-8P**
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(oxidation of cyclohexane and cyclohexene by dioxygen reductively activated on platinum and **heteropoly** compds.)
RN 12411-60-8 HCAPLUS
CN Tungstate(3-), (octa-μ-oxohexaoxohexamolybdate)hexadeca-μ-

oxohexaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kap
pa.O':κO':κO'':κO'':κO'':κO''':κO''':.
kappa.O''']]hexa-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



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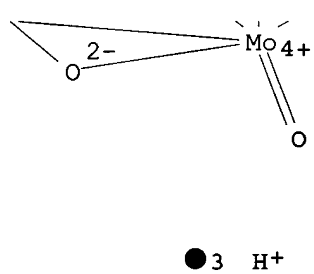

RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 18 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:640819 HCAPLUS
DN 140:84465
TI The activity of TiO2 and heteropolytungstate-modified TiO2 in the photocatalytic degradation of aqueous cyanide
AU Kim, Jae-Hyun; Lee, Ho-In
CS School of Chemical Engineering, Seoul National University, Sillim-dong, Gwanak-gu, Seoul, 151-744, S. Korea
SO Studies in Surface Science and Catalysis (**2003**), 145(Science and Technology in Catalysis 2002), 161-164
CODEN: SSCTDM; ISSN: 0167-2991
PB Elsevier Science B.V.
DT Journal
LA English

AB Photocatalytic oxidation of cyanide in water was studied. In the presence of P25, cyanate was produced prior to the other products, and **nitrate** was mainly formed as the cyanate decomposed Photo-oxidation of cyanide occurred even without dissolved oxygen suggesting that water mol. could be a source of oxygen. Tungstophosphoric acid-modified titania (TPA/TiO2) showed better activity than the corresponding pure titania. In the presence of OH radical scavenger such as iso-Pr alc. and bromide, the activity of TPA/TiO2 was retarded less than that of pure titania suggesting that the possibility of another reaction mechanism, probably direct oxidation by electron transfer.

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 60

IT **1343-93-7** 13463-67-7, Titania, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(activity of TiO2 and **heteropolytungstate**-modified TiO2 in photocatalytic degradation of aqueous cyanide)

IT **1343-93-7**
RL: **CAT (Catalyst use)**; USES (Uses)
(activity of TiO2 and **heteropolytungstate**-modified TiO2 in photocatalytic degradation of aqueous cyanide)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

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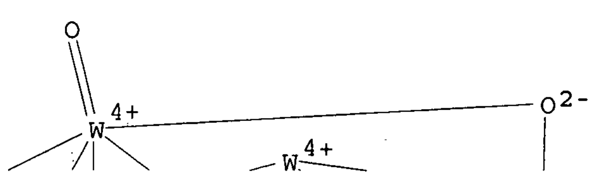

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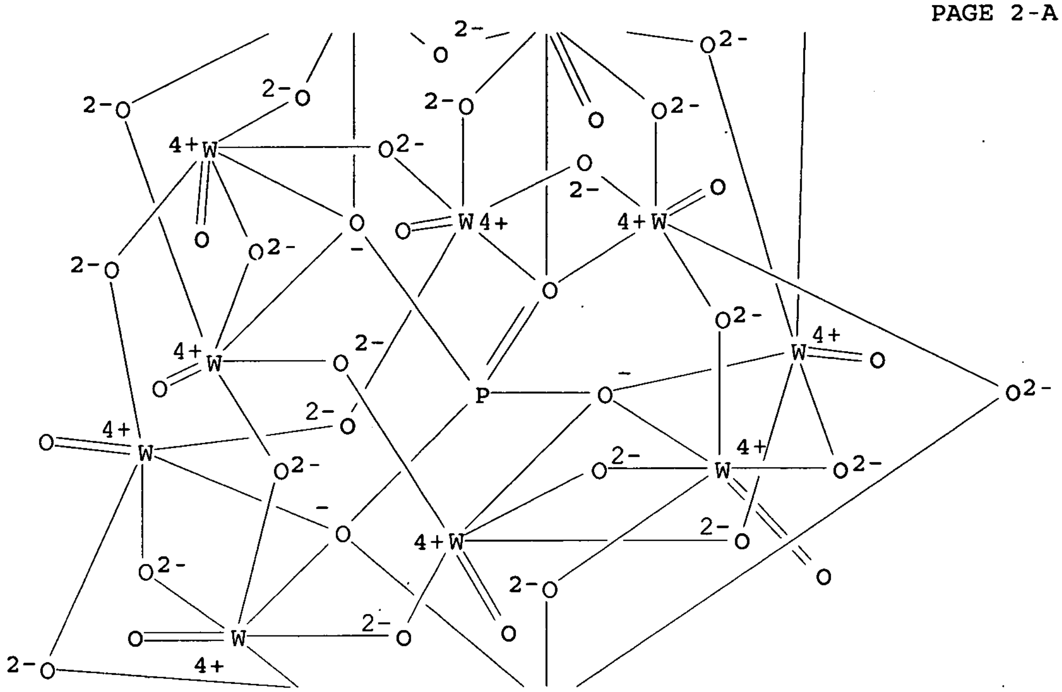

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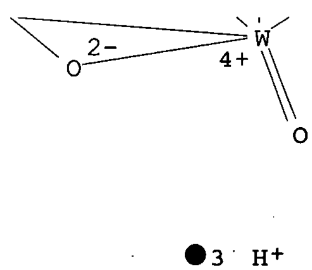


RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 19 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:574606 HCAPLUS
DN 140:67483
TI Preparation, characterization, and photocatalytic activity of POM-APS-silica hybrid catalysts
AU Li, Li; Guo, Yi-xing; Yang, Yu; Zhou, Ping; Jiang, Chun-jie
CS Faculty of Chemistry and Chemical Engineering, Qiqihar University, Qiqihar, 16100, Peop. Rep. China
SO Fenzi Kexue Xuebao (**2003**), 19(1), 33-39
CODEN: JMOSE7; ISSN: 1000-9035
PB Dongbei Shifan Daxue Xueshu Jikanshe
DT Journal
LA Chinese
AB Amine-functionalized mesoporous silica materials impregnated with

transition- metal-monosubstituted polyoxometalate cluster, K5[Ni(H2O)PW11O39] (PW11Ni), were prepared by coordination of nickel centers in the cluster with the amine surface groups in silica supports. XRD, UV/DRS,FT - IR, ICP - AES, Elemental anal. were used to characterize the structure and **composition** of the composite, and the photocatalytic activity of the composite was studied through photocatalytic degradation of dye Rhodamine B(RB). The exptl. results indicated that the photocatalytic activity of the composite was higher than that of the direct photolysis and the pure PW11Ni in the homogeneous system. Moreover, this kind of catalyst was insol., and it could be reused.

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 919-30-2D, silica derivs. 7631-86-9, Silica, uses **37194-75-5**
RL: **CAT (Catalyst use)**; USES (Uses)
(**polyoxometalate**-amine-functionalized silica hybrid photocatalysts)

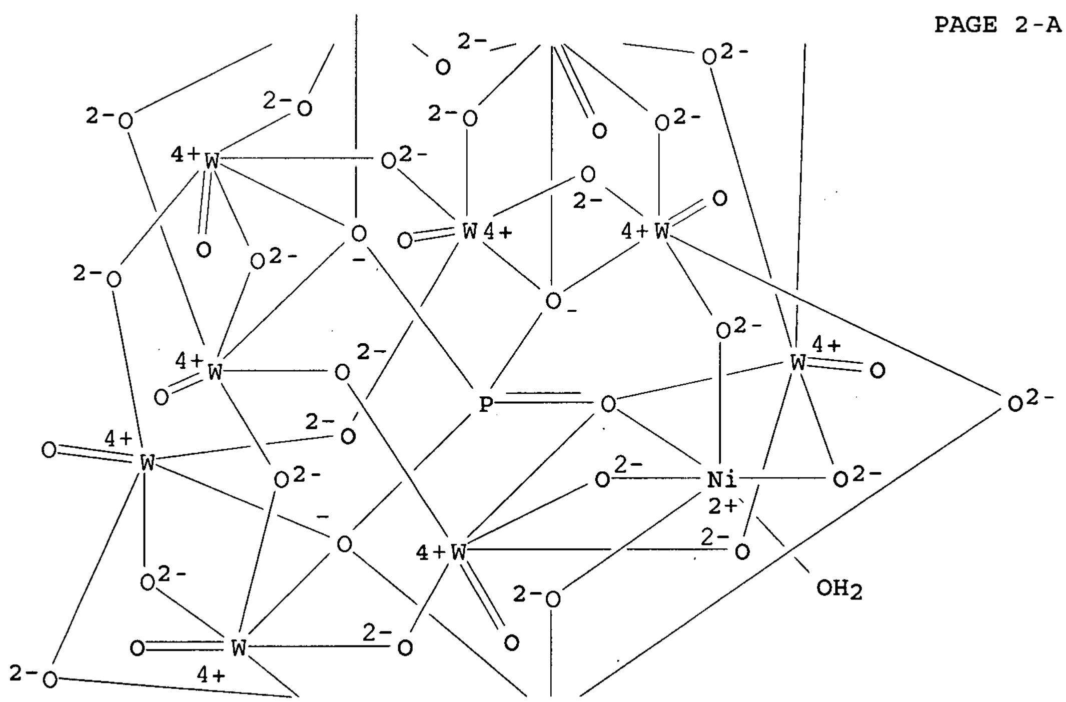
IT **37194-75-5**
RL: **CAT (Catalyst use)**; USES (Uses)
(**polyoxometalate**-amine-functionalized silica hybrid photocatalysts)

RN 37194-75-5 HCAPLUS

CN Tungstate(5-), (aquanickelate)tetracosa-μ-oxoundecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO'.ka ppa.O'':κO'':κO'':κO''':κO''':κO''']]undeca-, pentapotassium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



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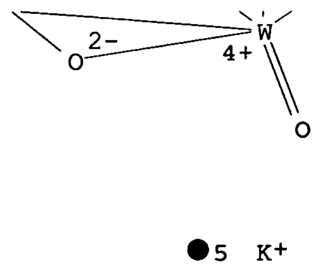
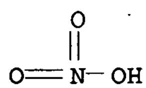


L32 ANSWER 20 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:541838 HCAPLUS
DN 139:365251
TI Role of acid and redox properties on propane oxidative dehydrogenation over polyoxometalates
AU Dimitratos, Nikolaos; Vedrine, Jacques C.
CS Leverhulme Centre for Innovative Catalysis, Department of Chemistry, University of Liverpool, Liverpool, L69 7ZD, UK
SO Catalysis Today (**2003**), 81(4), 561-571
CODEN: CATTEA; ISSN: 0920-5861
PB Elsevier Science B.V.
DT Journal
LA English
AB Cs2.5H1.5PV1Mo11O40 heteropolyoxometalate compds. were studied for propane oxidative dehydrogenation (ODH) in the 340-400° temperature range. Their redox and Bronsted acid properties were tuned by introducing a redox metal element M such as CoII, FeIII, GaIII, NiII, SbIII or ZnII in a V:M atom ratio equal to 1:1. This introduction was carried out either directly in the synthesis solution or by usual aqueous cationic exchange of protons of the solid Cs salt. TGA and FT-IR analyses allowed us to determine the extent of metal M substitution for MoVI in the Keggin anion and proton replacement by the M cation. , Under catalytic conditions (C3:O2:He=2:1:2, flow rate 15 cm3 min-1, 12 h on stream), the catalysts were stable, with only a small part of the substituted elements (V and/or M) being extracted from the Keggin anion during the reaction. The presence of these metal M cations enabled us to tune the redox and acid properties of the material and to get high selectivity for propene (60-80% at 5 and 10% propane conversion) at a relatively low temperature (300-400 °C). The direct synthesis method was found more efficient than the classical cationic exchange technique for propane ODH.
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 67
IT 1309-64-4, Antimony oxide, reactions 7779-88-6, Zinc **nitrate** **10421-48-4**, Iron **nitrate** (Fe(NO3)3) **13138-45-9** , Nickel **nitrate** 13494-90-1, Gallium **nitrate** (Ga(NO3)3) 14024-48-7, Cobalt(2+) bis(acetylacetonate)
RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(effects of metals on redox properties of molybdenum-containing polyoxometalates in catalytic propane oxidative dehydrogenation)
IT **12293-15-1** 200941-26-0
RL: **CAT (Catalyst use)**; USES (Uses)
(prepns. of molybdenum-containing **polyoxometalates** for propane oxidative dehydrogenation and the redox properties thereof)
IT **10421-48-4**, Iron **nitrate** (Fe(NO3)3) **13138-45-9** , Nickel **nitrate**

RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(effects of metals on redox properties of molybdenum-containing polyoxometalates in catalytic propane oxidative dehydrogenation)

RN 10421-48-4 HCAPLUS

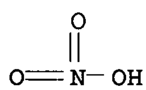
CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)



●1/3 Fe(III)

RN 13138-45-9 HCAPLUS

CN Nitric acid, nickel(2+) salt (8CI, 9CI) (CA INDEX NAME)



●1/2 Ni(II)

IT **12293-15-1**
RL: **CAT (Catalyst use)**; USES (Uses)
(prepns. of molybdenum-containing **polyoxometalates** for propane oxidative dehydrogenation and the redox properties thereof)

RN 12293-15-1 HCAPLUS

CN Vanadate(4-), (eicosa-μ-oxoundecaoxoundecamolybdate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO
':κO':κO'':κO'':κO'':κO''':κO''':.kapp
a.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)

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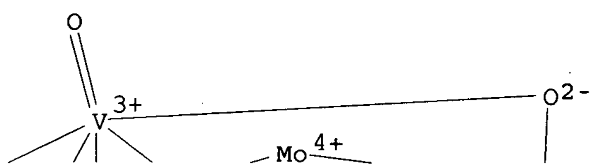

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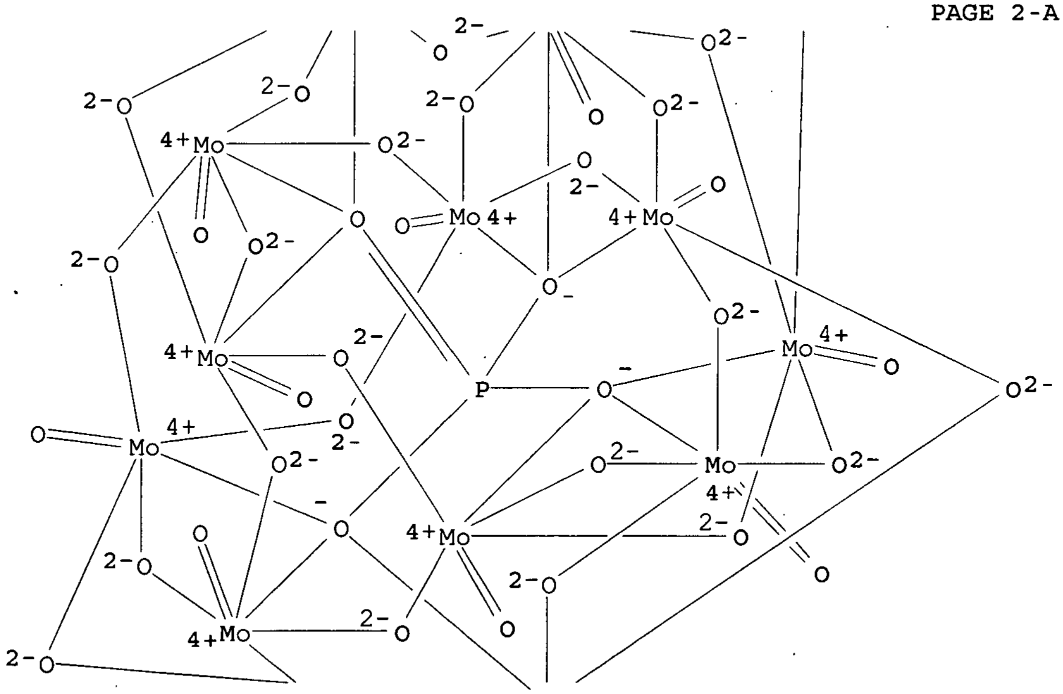

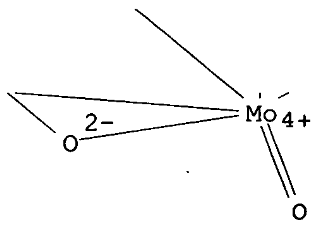

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●4 H^+

RE.CNT 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 21 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:472227 HCAPLUS
DN 139:267844
TI Synergistic effect of Keggin-type [Xn+W11O39](12-n)- and TiO2 in macroporous hybrid materials [Xn+W11O39](12-n)--TiO2 for the photocatalytic degradation of textile dyes
AU Yang, Yu; Guo, Yihang; Hu, Changwen; Jiang, Chunjie; Wang, Enbo
CS Faculty of Chemistry, Institute of Polyoxometalate Chemistry, Northeast Normal University, Changchun, 130024, Peop. Rep. China
SO Journal of Materials Chemistry (**2003**), 13(7), 1686-1694
CODEN: JMACEP; ISSN: 0959-9428
PB Royal Society of Chemistry
DT Journal
LA English
AB Macroporous titania materials functionalized with monovacant Keggin-type polyoxometalates (POMs) [Xn+W11O39](12-n)- (XW11; Xn+ = P5+, Si4+, Ge4+) were prepared by the sol-gel as well as the template technique. Lacunary XW11 clusters were incorporated into wall structures of macroporous titania, resulting in the formation of hybrid titania materials. The structural integrity of the XW11 clusters in the composites was characterized by UV diffuse reflectance spectra (UV/DRS), IR spectra, inductively coupled plasma atomic emission spectrometry (ICP-AES), 31P MAS NMR spectroscopy and thermogravimetric anal. (TGA). These investigations indicated that the primary lacunary Keggin structures remained intact in the hybrid composites. The porous structure of the composites was demonstrated via SEM and N2 adsorption-desorption isotherms, with the pore diams. in the range of 300 to 450 nm. The photocatalytic performances of the as-synthesized composites were evaluated by the degradation of aqueous textile dyes such as Rhodamine B, Methyl orange and Erythrosine B. S., and the intermediates and the final products of the degradation of Rhodamine B were detected by electrospray mass spectrometer (ES-MS) and ion chromatog. (IC). The as-synthesized composites showed much higher photocatalytic activity than pure TiO2 and pure POMs, which has been attributed to the synergistic effect resulting from the combination of POMs and TiO2.
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 40, 41, 67
IT 13463-67-7D, Titania, surface reaction product with polyoxometalates **87261-30-1D**, Sodium tungstophosphate(Na7PW11O39), surface reaction product with titania 153829-13-1D, surface reaction product with titania 153829-14-2D, surface reaction product with titania
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical

process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(macroporous hybrid TiO_2 photocatalysts functionalized with monovacant Keggin-type **polyoxometalates** for photodegrdn. of textile dyes)

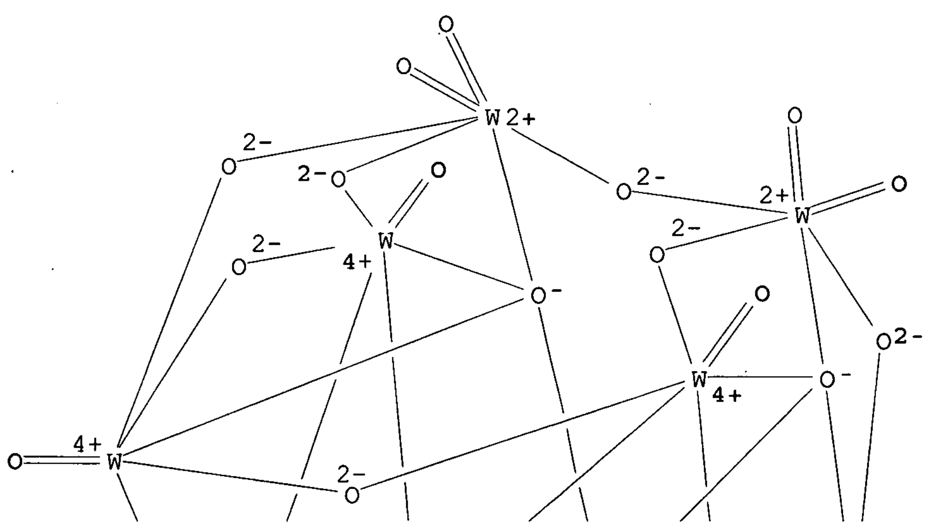
IT 124-38-9P, Carbon dioxide, properties 14797-55-8P, **Nitrate** ion, properties 14798-03-9P, Ammonium ion, properties 16887-00-6P, Chloride, properties
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(photoproduct; mechanism of photocatalytic degradation of Rhodamine B om macroporous hybrid TiO_2 photocatalysts functionalized with monovacant Keggin-type polyoxometalates)

IT **87261-30-1D**, Sodium tungstophosphate($Na_7PW_{11}O_{39}$), surface reaction product with titania
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(macroporous hybrid TiO_2 photocatalysts functionalized with monovacant Keggin-type **polyoxometalates** for photodegrdn. of textile dyes)

RN 87261-30-1 HCAPLUS

CN Tungstate(7-), eicosa-μ-oxopentadecaoxo[μ11-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''']]undeca-, heptasodium (9CI) (CA INDEX NAME)

PAGE 1-A



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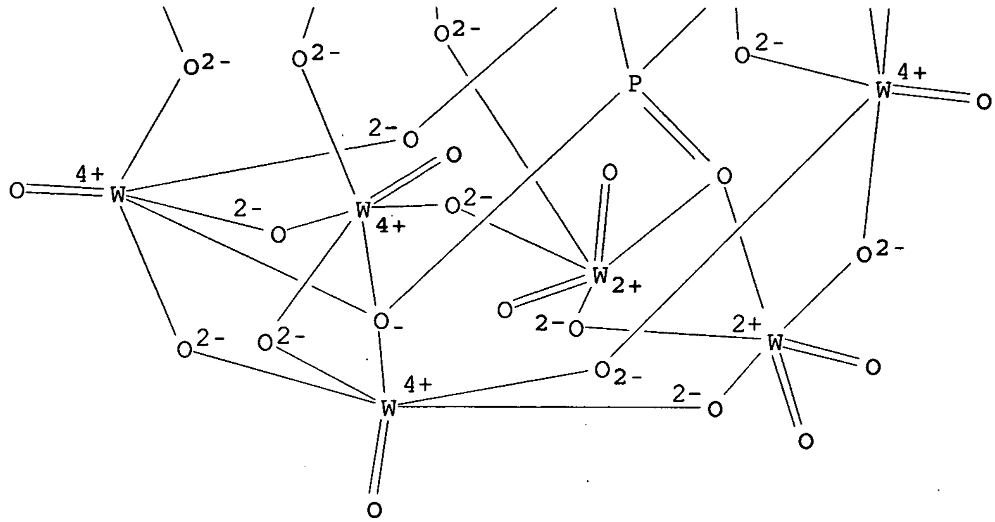


PAGE 3-A

●7 Na^+

RE.CNT 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 22 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:453438 HCAPLUS
DN 139:103310
TI FePMo12O40 heteropoly-compound in preparation of hydrodesulfurization catalysts
AU Spojakina, Alla A.; Kraleva, Elka U.; Jiratova, Kveta; Kocianova, Jana; Petrov, Lachezar A.
CS Inst. of Catalysis, Bulgarian Acad. of Sci., Sofia, 1113, Bulg.
SO Bulgarian Chemical Communications (**2002**), 34(3/4), 495-504
CODEN: BCHCE4; ISSN: 0324-1130
PB Bulgarian Academy of Sciences and the Bulgarian Chemical Society
DT Journal
LA English
AB TiO2 and Al2O3 supported catalysts with Mo loading 6 and 12 weight% have been prepared using Fe salt of H3PMo12O40 heteropolyacid and characterized by IR spectroscopy and TPR. Catalysts have been tested in the thiophene hydrodesulfurization. The support affects the phase **composition** of catalyst precursors as result of interaction between supported compound and support itself. Analogs of titanium heteropolyacid on TiO2 and aluminum heteropoly-molybdate on Al2O3 are formed being precursors of active sites in the thiophene hydrodesulfurization. Iron increases Mo reducibility on alumina and decreases it on TiO2 supported catalysts. Iron promoting effect is observed in both, the alumina and titania samples increasing two times HDS activity. Iron promoting effect on TiO2-supported samples overlaps with promoting role of TiO2 itself at the lower Mo concentration
CC 51-6 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 67
IT 7439-98-7, Molybdenum, uses **12263-11-5**

RL: **CAT (Catalyst use)**; USES (Uses)
(FePMo12O40 **heteropoly**-compound in preparation of hydrodesulfurization catalysts)

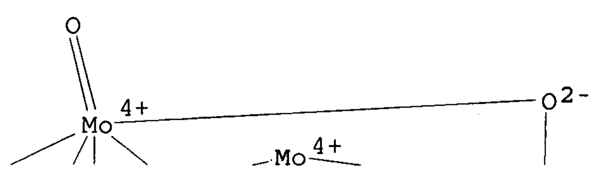
IT **12263-11-5**

RL: **CAT (Catalyst use)**; USES (Uses)
(FePMo12O40 **heteropoly**-compound in preparation of hydrodesulfurization catalysts)

RN 12263-11-5 HCAPLUS

CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, iron(3+) (1:1) (9CI) (CA INDEX NAME)

PAGE 1-A



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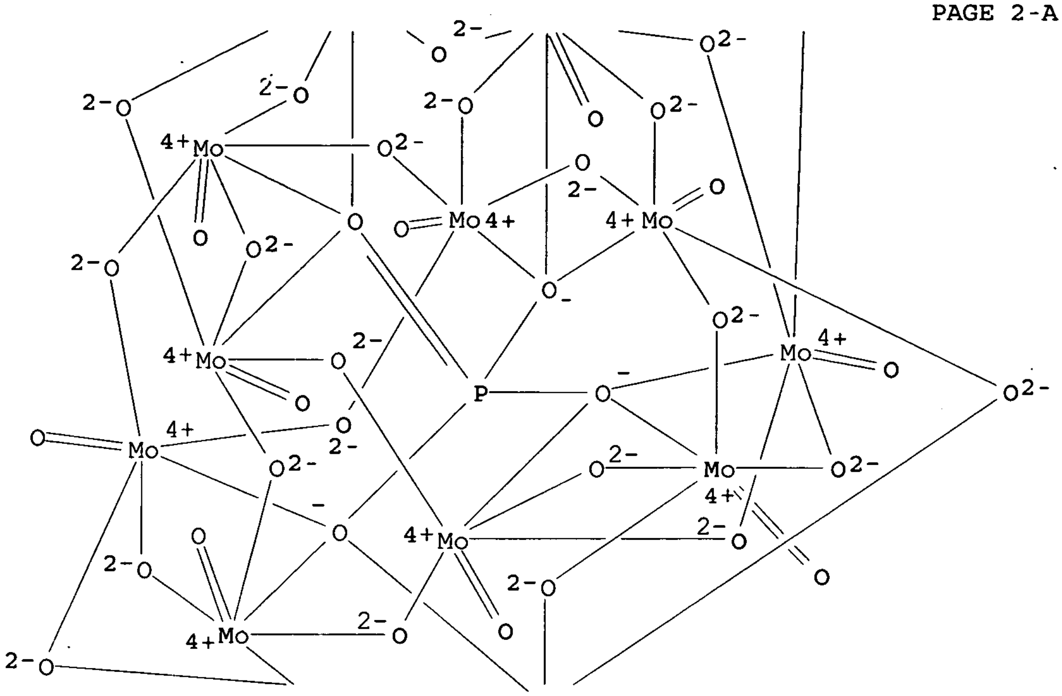

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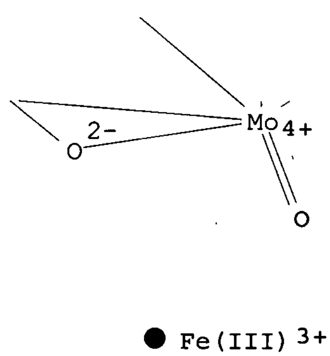

RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 23 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:360958 HCAPLUS
DN 139:117137
TI A Water-Soluble and "Self-Assembled" Polyoxometalate as a Recyclable Catalyst for Oxidation of Alcohols in Water with Hydrogen Peroxide
AU Sloboda-Rozner, Dorit; Alsters, Paul L.; Neumann, Ronny
CS Department of Organic Chemistry, Weizmann Institute of Science, Rehovot, 76100, Israel
SO Journal of the American Chemical Society (**2003**), 125(18), 5280-5281
CODEN: JACSAT; ISSN: 0002-7863
PB American Chemical Society

DT Journal
LA English
OS CASREACT 139:117137
AB A water-soluble polyoxometalate, Na12[WZnZn2(H2O)2(ZnW9O34)2], synthesized from readily available zinc **nitrate** and sodium tungstate in the presence of nitric acid, is an effective catalyst for the preparation of ketones and carboxylic acids by selective alc. oxidation with hydrogen peroxide in biphasic (water-alc.) reaction media. Carboxylic acids are obtained by oxidation of primary alcs. with hydrogen peroxide in the presence of Na12[WZnZn2(H2O)2(ZnW9O34)2]; addition of catalytic amts. of TEMPO to oxidation mixts. yields increased proportions of the aldehyde in addition to the carboxylic acid. Secondary alcs. are oxidized in preference to primary alcs. to give ketones; carbon-carbon bond cleavage byproducts are seen in one case. The catalyst generated in situ is as active as the isolated catalyst; in addition, the catalyst can be separated and recycled without losses in either selectivity or in activity.
CC 23-15 (Aliphatic Compounds)
Section cross-reference(s): 78
IT 7779-88-6, Zinc **nitrate** 13472-45-2, Sodium tungstate
RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(preparation of a zinc-tungsten polyoxometalate from zinc **nitrate** and sodium tungstate in aqueous solution and its use as a catalyst for the oxidation of primary and secondary alcs. to carboxylic acids and ketones with hydrogen peroxide)
IT **188746-62-5P**
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation of a zinc-tungsten **polyoxometalate** from zinc **nitrate** and sodium tungstate in aqueous solution and its use as a catalyst for the oxidation of primary and secondary alcs. to carboxylic acids and ketones with hydrogen peroxide)
IT 7697-37-2, Nitric acid, reactions
RL: RGT (Reagent); RACT (Reactant or reagent)
(preparation of a zinc-tungsten polyoxometalate from zinc **nitrate** and sodium tungstate in aqueous solution and its use as a catalyst for the oxidation of primary and secondary alcs. to carboxylic acids and ketones with hydrogen peroxide)
IT **188746-62-5P**
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation of a zinc-tungsten **polyoxometalate** from zinc **nitrate** and sodium tungstate in aqueous solution and its use as a catalyst for the oxidation of primary and secondary alcs. to carboxylic acids and ketones with hydrogen peroxide)
RN 188746-62-5 HCAPLUS
CN Tungstate(12-), (diaquapentazincate)octatriaconta-μ-oxotetra-μ3-oxoocta-μ4-oxooctadecaoxononadeca-, dodecasodium (9CI) (CA INDEX NAME)

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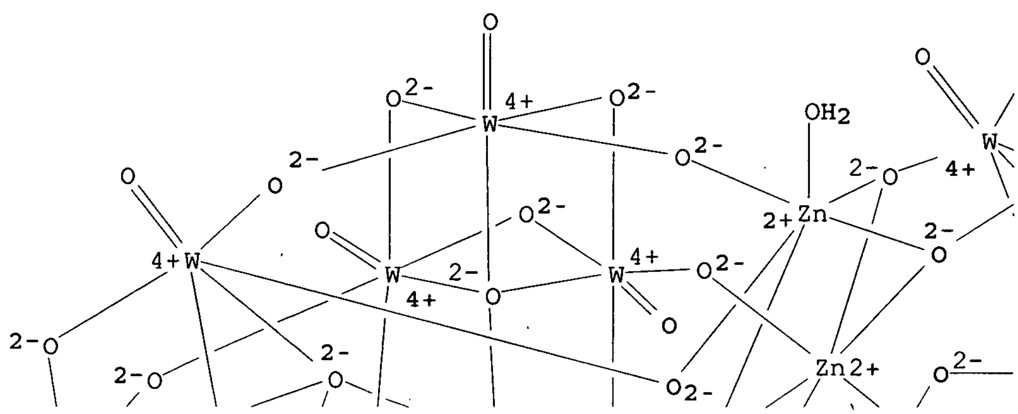

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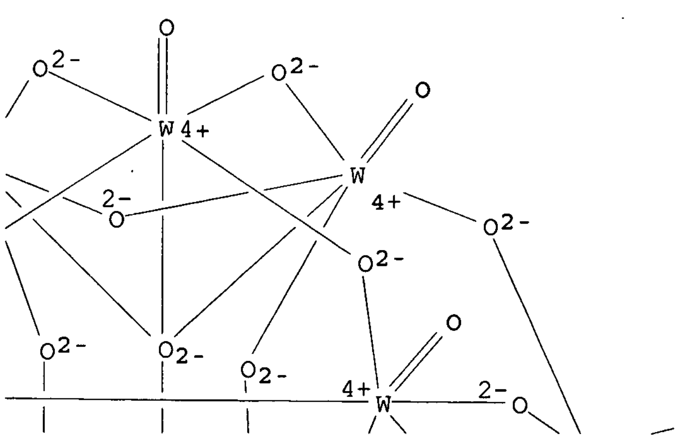

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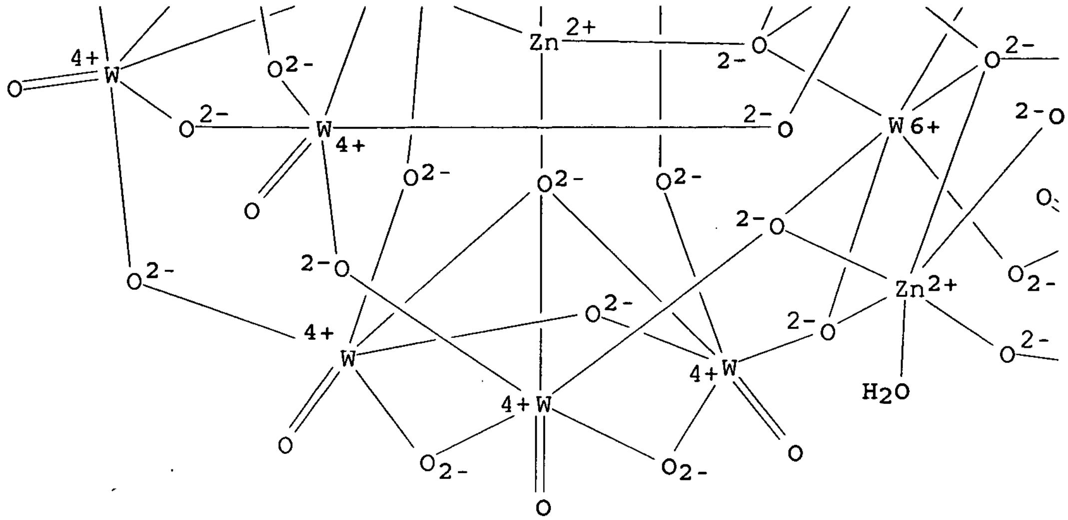

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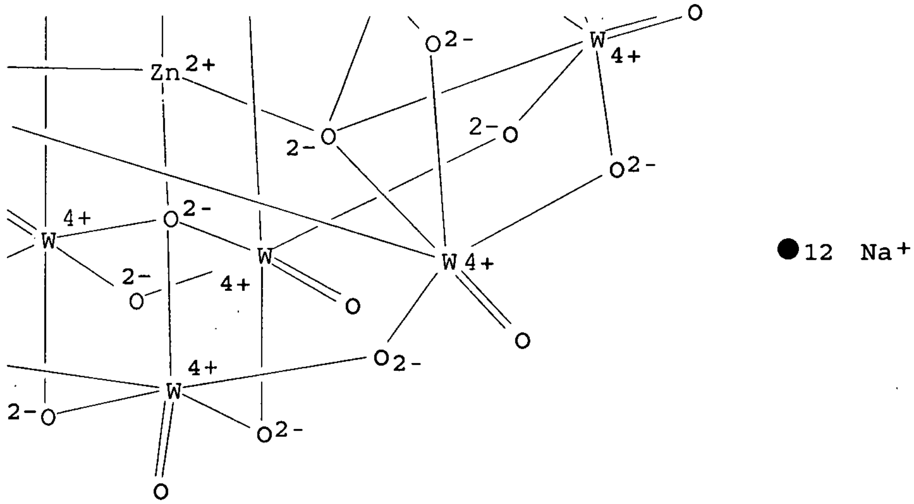


RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 24 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:211981 HCAPLUS
DN 139:52725
TI Solvent-free and selective oxidation of hydroxy groups to their corresponding carbonyl functions with ferric **nitrate** activated by heteropoly acids
AU Firouzabadi, Habib; Iranpoor, Nasser; Amani, Kamal
CS Department of Chemistry, Shiraz University, Shiraz, 71454, Iran
SO Synthesis (**2003**), (3), 408-412
CODEN: SYNTBF; ISSN: 0039-7881
PB Georg Thieme Verlag
DT Journal

LA English
OS CASREACT 139:52725
AB Keggin-type heteropoly acids revealed high catalytic activity for swift and chemoselective oxidation of various aromatic alcs., e.g. PhCh2OH, to the corresponding carbonyl compds., e.g. PhCHO, using ferric **nitrate** as an oxidant under mild and solvent-free conditions. The catalytic activities of the heteropoly acids were much higher than mineral or solid acids such as sulfuric acid, p-toluenesulfonic acid, triflic acid, acidic Amberlyst-15, Montmorillonite-K10 clay, and HY-zeolite.
CC 25-16 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
Section cross-reference(s): 22
ST carbonyls synthesis solvent free chemoselective oxidn arom alc; ferric **nitrate** heteropoly acid catalyst selective oxidn carbonyls synthesis; zeolite catalyst solvent effect chemoselective oxidn arom carbonyls synthesis
IT Alcohols, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(aralkyl; synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)
IT Carbonyl compounds (organic), preparation
RL: SPN (Synthetic preparation); PREP (Preparation)
(aromatic; synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)
IT Oxidation catalysts
(selective; synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)
IT Oxidation
Solvent effect
(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)
IT Heteropoly acids
Zeolite HY
RL: CAT (Catalyst use); USES (Uses)
(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)
IT 104-15-4, p-Toluene sulfonic acid, uses 144-62-7, Oxalic acid, uses 1318-93-0, Montmorillonite ((Al1.33-1.67Mg0.33-0.67)(Ca0-1Na0-1)0.33Si4(OH)2O10.xH2O), uses **1343-93-7** 1493-13-6, Triflic acid 7664-93-9, Sulfuric acid, uses 9037-24-5, Amberlyst 15 10213-10-2 12026-92-5 12027-43-9 12315-47-8 12501-23-4 60646-64-2
RL: **CAT (Catalyst use)**; USES (Uses)
(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by **heteropoly** acids)
IT 60-12-8, β-Phenyl ethanol 90-01-7, 2-Hydroxy benzyl alcohol 91-01-0, Diphenyl methanol 93-54-9, 1-Phenyl 1-propanol 93-56-1, Phenyl glycol 98-85-1 100-51-6, Benzylic alcohol, reactions 105-13-5, 4-Methoxy benzyl alcohol 111-87-5, 1-Octanol, reactions 119-53-9 122-97-4, γ-Phenyl propyl alcohol 123-96-6, 2-Hydroxy octane 589-18-4, 4-Methyl benzyl alcohol 611-71-2 612-25-9, 2-Nitro benzyl alcohol 873-76-7, 4-Chloro benzyl alcohol 1632-68-4, Norborneol
RL: RCT (Reactant); RACT (Reactant or reagent)
(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate**

activated by heteropoly acids)

IT 7631-99-4, Sodium **nitrate**, reactions 7782-61-8, Iron (III) **nitrate** nonahydrate 7789-02-8, Chromium (III) **nitrate** nonahydrate 10035-06-0, Bismuth (III) **nitrate** pentahydrate 10196-18-6, Zinc **nitrate** hexahydrate 13446-18-9, Magnesium **nitrate** hexahydrate 13478-38-1, Copper (II) **nitrate** hexahydrate 13746-89-9, Zirconium **nitrate** 15078-94-1, Cerium ammonium **nitrate**

RL: RGT (Reagent); RACT (Reactant or reagent)

(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)

IT 90-02-8P, 2-Hydroxy benzaldehyde, preparation 93-55-0P, Phenyl ethyl ketone 98-86-2P, Acetophenone, preparation 100-52-7P, Benzaldehyde, preparation 104-53-0P, Benzene propanal 104-87-0P, 4-Methyl benzaldehyde 104-88-1P, 4-Chloro benzaldehyde, preparation 111-13-7P, Hexyl methyl ketone 119-61-9P, Benzophenone, preparation 122-78-1P, Phenyl acetaldehyde 123-11-5P, 4-Methoxy benzaldehyde, preparation 124-13-0P, Octanal 134-81-6P, Dibenzoyl 497-38-1P, Norcamphor 552-89-6P, 2-Nitro benzaldehyde 582-24-1P, Benzoyl methanol 611-73-4P

RL: SPN (Synthetic preparation); PREP (Preparation)

(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by heteropoly acids)

IT **1343-93-7**

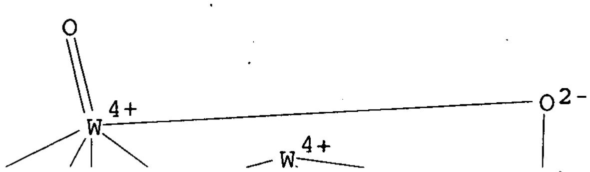
RL: **CAT (Catalyst use)**; USES (Uses)

(synthesis of carbonyls by solvent free and chemoselective oxidation of primary, secondary and benzylic alcs. with ferric **nitrate** activated by **heteropoly** acids)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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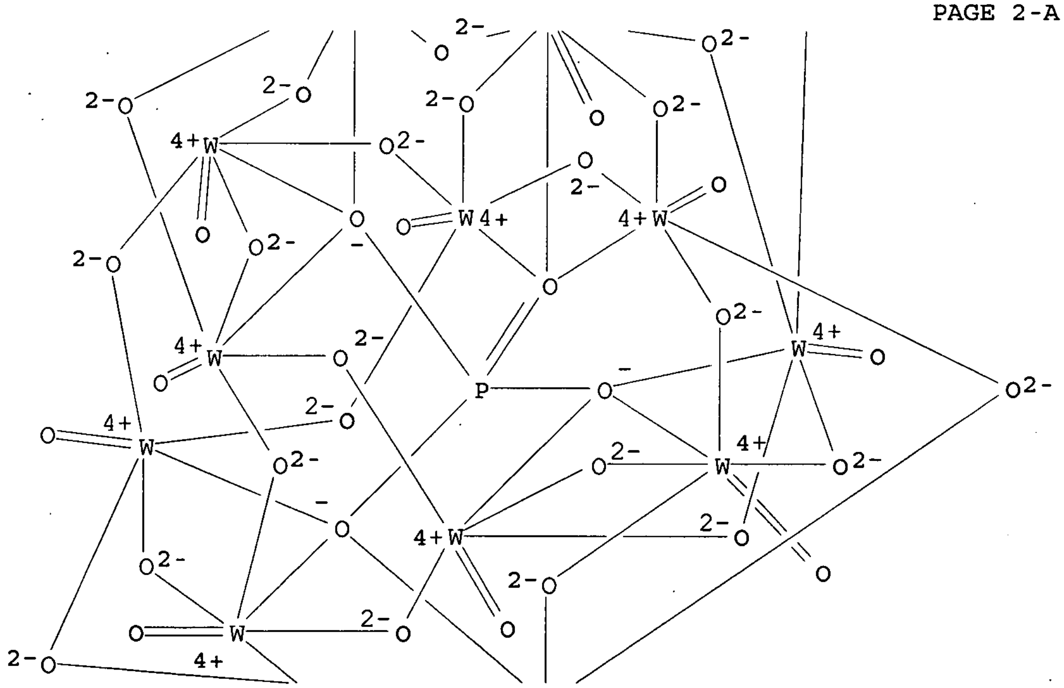

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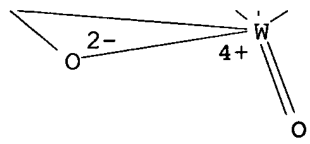


● 3 H^+

RE.CNT 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 25 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:166974 HCAPLUS
DN 138:221456
TI Preparation of olefin oxidation products using heteropoly acid catalysts
IN Furuya, Masahiko; Nakashima, Hitoshi
PA Asahi Kasei Corporation, Japan; Noguchi Research Institute
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

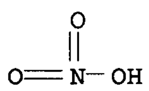
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003064007	A2	20030305	JP 2001-258538	20010828 <--
PRAI	JP 2001-258538		20010828 <--		

AB The products are prepared by oxidation of olefins by mol. O in the presence of heteropoly acid catalysts containing rare earth elements, Group IVB, VB, VIB, or VIIB elements, Ni, Pd, Ir, or Pt in their double defects. Cyclooctene was oxidized by O in dichloroethane-MeCN mixture in the presence of Y-substituted tetrabutylammonium tungstosilicate (preparation given) at 75° for 75 h to give cyclooctene oxide with 86% selectivity at 20% conversion.
IC ICM C07C027-12
ICS B01J023-30; B01J023-652; B01J023-85; C07B033-00; C07C029-50; C07C035-08; C07C035-20; C07C045-34; C07C049-403; C07C049-413; C07C409-14; C07D301-06; C07D303-06; C07B061-00
CC 27-2 (Heterocyclic Compounds (One Hetero Atom))
IT 1941-27-1DP, Tetrabutylammonium **nitrate**, reaction products with decatungstosilicic acid and transition metal salts 7550-45-0DP, Titanium tetrachloride, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** 10102-05-3DP, Palladium dinitrate, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** 10361-92-9DP, Yttrium trichloride, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** 12645-45-3DP, Iridium chloride, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** **13138-45-9DP**, Nickel dinitrate, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** 16941-12-1DP, Chloroplatinic acid, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** 37349-30-7DP, Niobic acid, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate** **102073-48-3DP**, reaction products with rare earth and transition metal salts and tetrabutylammonium **nitrate**
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP

(Preparation); USES (Uses)
(catalyst; preparation of olefin oxidation products using **heteropoly** acid catalysts)

IT **13138-45-9DP**, Nickel dinitrate, reaction products with decatungstosilicic acid and tetrabutylammonium **nitrate**
102073-48-3DP, reaction products with rare earth and transition metal salts and tetrabutylammonium **nitrate**
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(catalyst; preparation of olefin oxidation products using **heteropoly** acid catalysts)

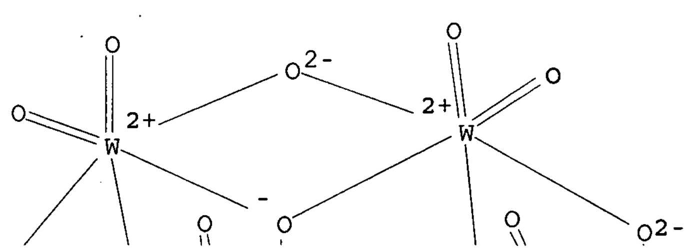
RN 13138-45-9 HCAPLUS
CN Nitric acid, nickel(2+) salt (8CI, 9CI) (CA INDEX NAME)



●1/2 Ni(II)

RN 102073-48-3 HCAPLUS
CN Tungstate(8-), [μ10-[orthosilicato(4-)-κO:κO:κO:.kapp a.O':κO':κO':κO'':κO'':κO''':κO''']]oc tadeca-μ-oxotetradecaoxodeca-, octapotassium (9CI) (CA INDEX NAME)

PAGE 1-A



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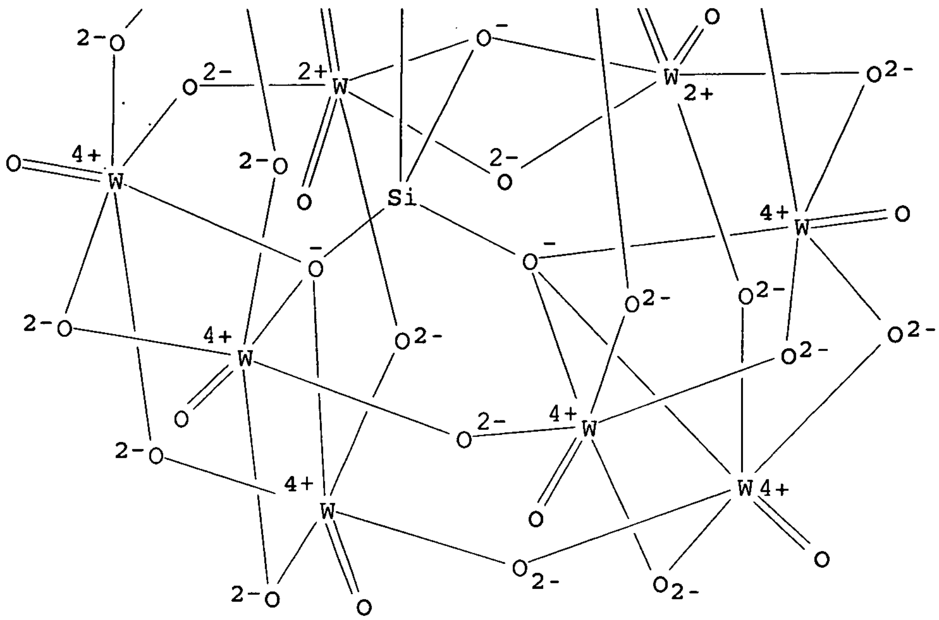

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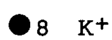


L32 ANSWER 26 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:599245 HCAPLUS
DN 137:300442
TI Catalytic systems based on platinum and heteropoly compounds for oxidation of hydrocarbons with a dioxygen-dihydrogen gaseous mixture
AU Kirillova, N. V.; Kuznetsova, N. I.; Kuznetsova, L. I.; Likholobov, V. A.
CS G. K. Boreskov Institute of Catalysis, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, 630090, Russia
SO Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (**2002**), 51(6), 975-981
CODEN: RCBUEY; ISSN: 1066-5285
PB Kluwer Academic/Consultants Bureau
DT Journal
LA English
AB The oxidation of cyclohexane, saturated and aromatic hydrocarbons with an O2-H2 gaseous mixture was applied to study the catalytic properties of bicomponent systems based on platinum and heteropoly compds. (HPC). The consumption of gases and the yield of the products depend on the surface area, accessibility of the platinum species to the reactant, and **compn**. of the HPC. The solid Pt samples suspended in an HPC solution, the Pt(5%)-PMo12/Al2O3 bicomponent supported system, and the solid bicomponent sample prepared from the [Pt(NH3)4][H2PMo12O40]2·7H2O complex salt were used as catalysts. Among the catalysts with the same molar compns. of the active components, the bicomponent materials are much more active in the oxidation than a combination of the Pt catalyst with an HPC solution The bulk catalyst is a crystalline solid substance with the HPC structure with incorporated Pt species. Molybdenum is predominantly oxidized, and platinum is present in both the reduced and ionic states. The oxidation of

saturated hydrocarbons affords alcs. and ketones. The yield of the positional isomers of the oxygenated products increases in the series primary << secondary < tertiary C-atoms. Benzene and toluene are converted into the corresponding phenols in equal yields. The scheme proposed for oxidation assumes the participation of the active hydroxyl radical.

CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 23, 24, 25

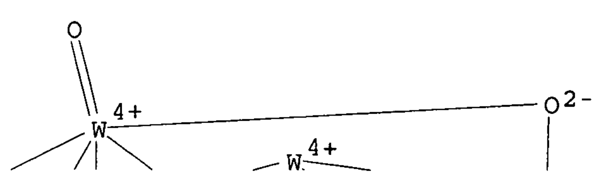
IT **1343-93-7** 1344-28-1, Alumina, uses 7440-06-4, Platinum, uses
12026-57-2 12207-90-8 12293-15-1
12293-21-9 12293-24-2 12398-73-1
12411-60-8 12786-62-8 104484-97-1
146066-47-9
RL: **CAT (Catalyst use)**; USES (Uses)
(catalytic systems based on platinum and **heteropoly** compds. for oxidation of hydrocarbons with a dioxygen-dihydrogen gaseous mixture)

IT **1343-93-7 12026-57-2 12207-90-8**
12293-15-1 12293-21-9 12293-24-2
12398-73-1 12411-60-8 12786-62-8
104484-97-1 146066-47-9
RL: **CAT (Catalyst use)**; USES (Uses)
(catalytic systems based on platinum and **heteropoly** compds. for oxidation of hydrocarbons with a dioxygen-dihydrogen gaseous mixture)

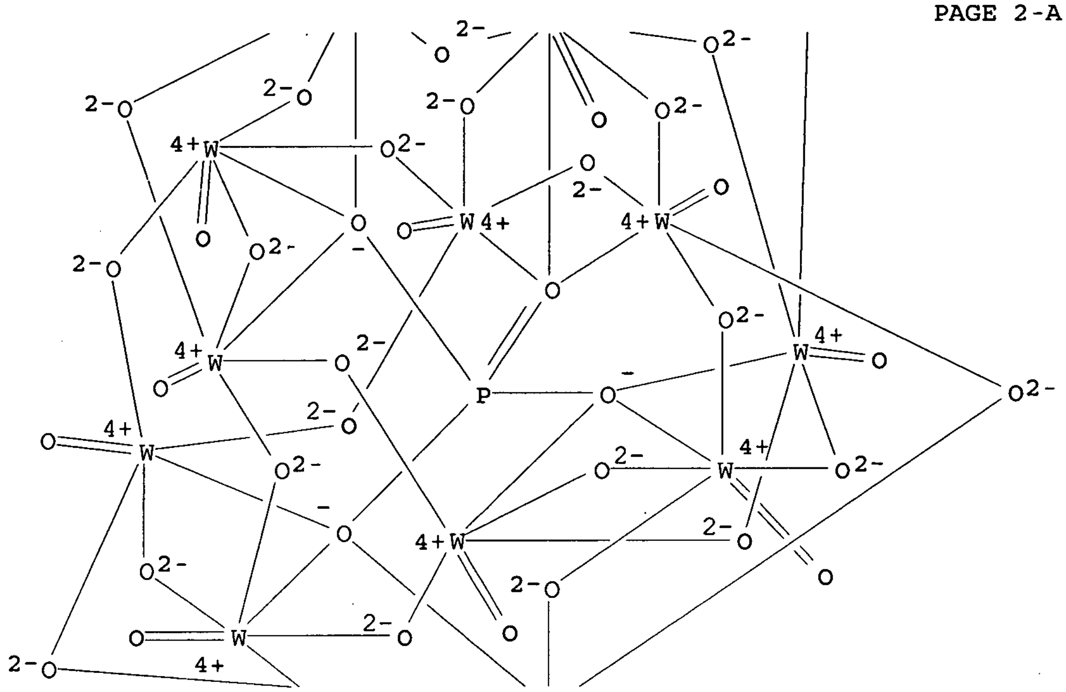
RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



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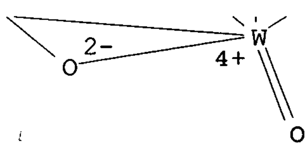
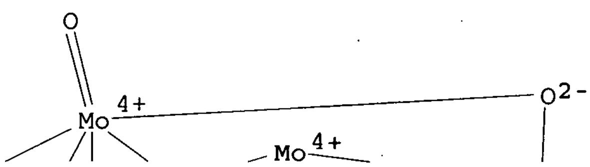


●3 H^+

RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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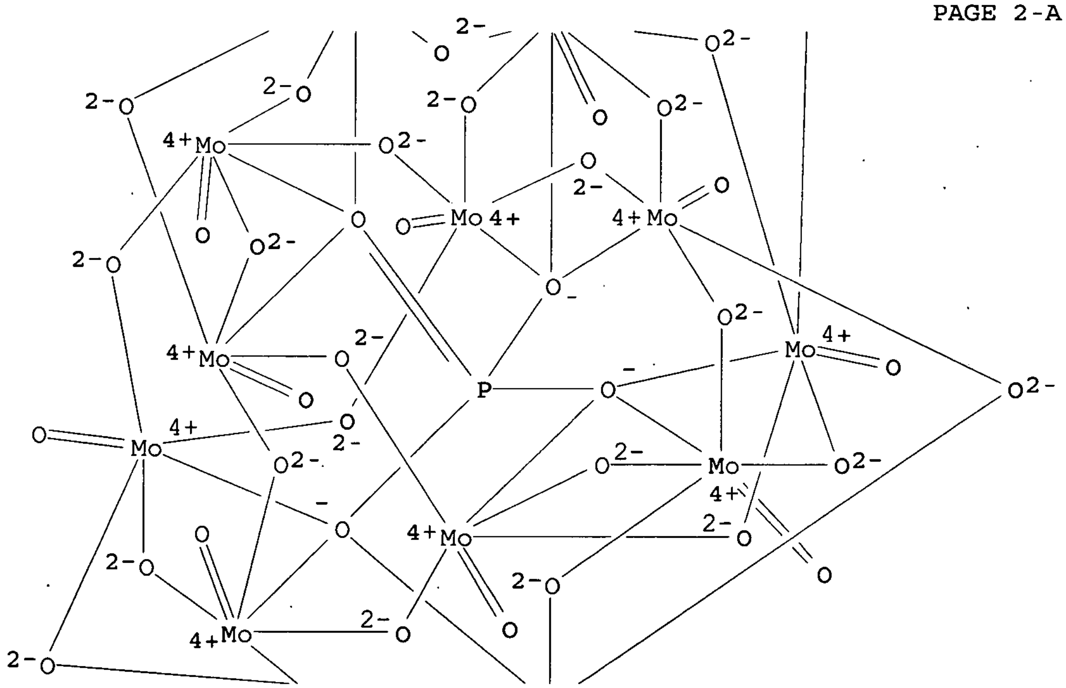

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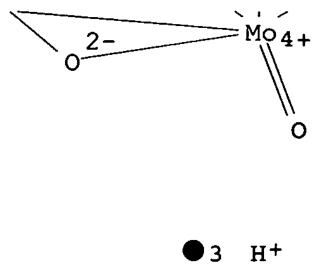
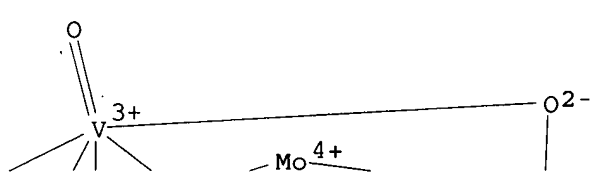


RN 12207-90-8 HCAPLUS
CN Molybdate(6-), hexatriaconta-μ-oxooctadecaoxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':κO'':.kappa.O''':κO''']]octadeca-, hexahydrogen (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 12293-15-1 HCAPLUS
CN Vanadate(4-), (eicosa-μ-oxoundecaoxoundecamolybdate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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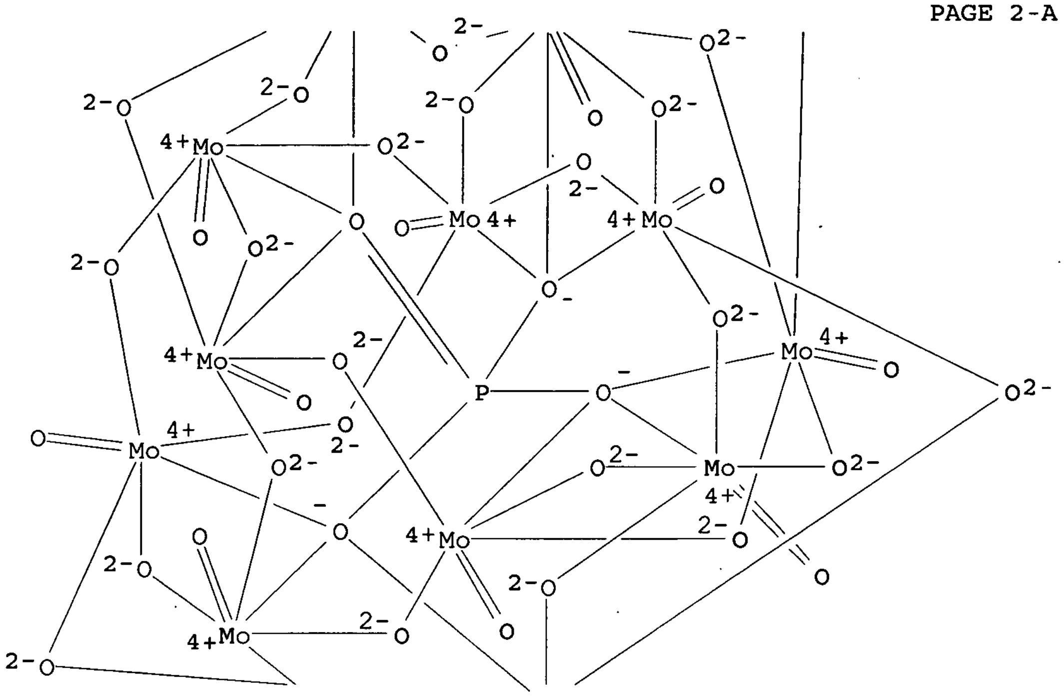

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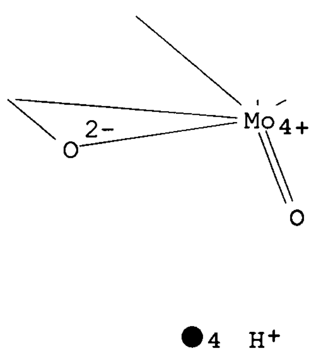
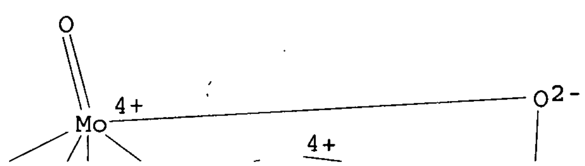


RN 12293-21-9 HCAPLUS
CN Vanadate(5-), (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa .O':κO':κO'':κO'':κO'':κO''':κO''':.ka ppa.O''']]di-, pentahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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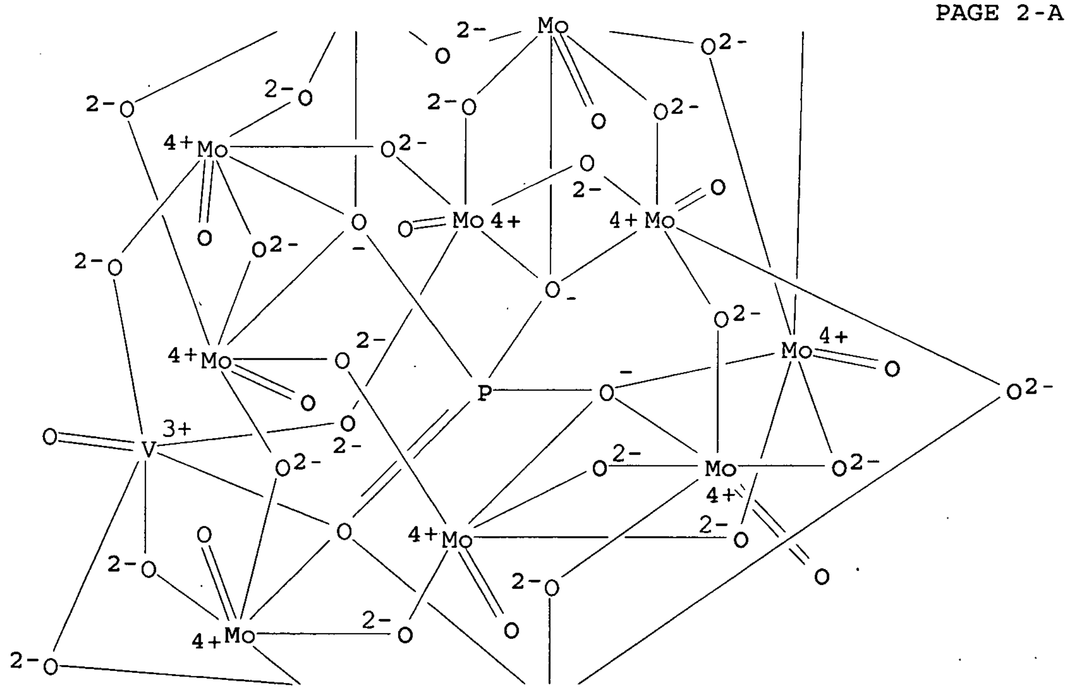
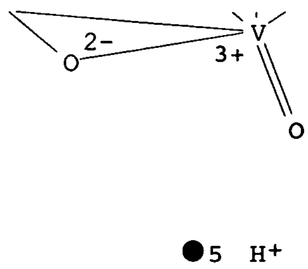
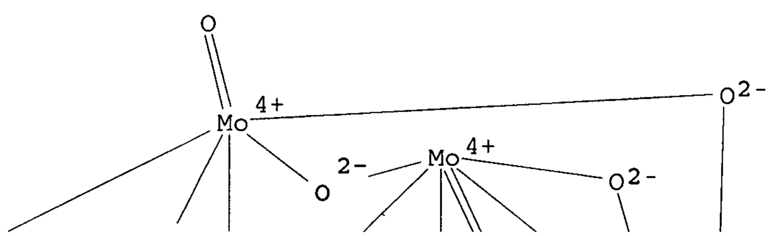


PAGE 3-A



RN 12293-24-2 HCAPLUS
CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxononaoxononamolybdate)[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tri-, hexahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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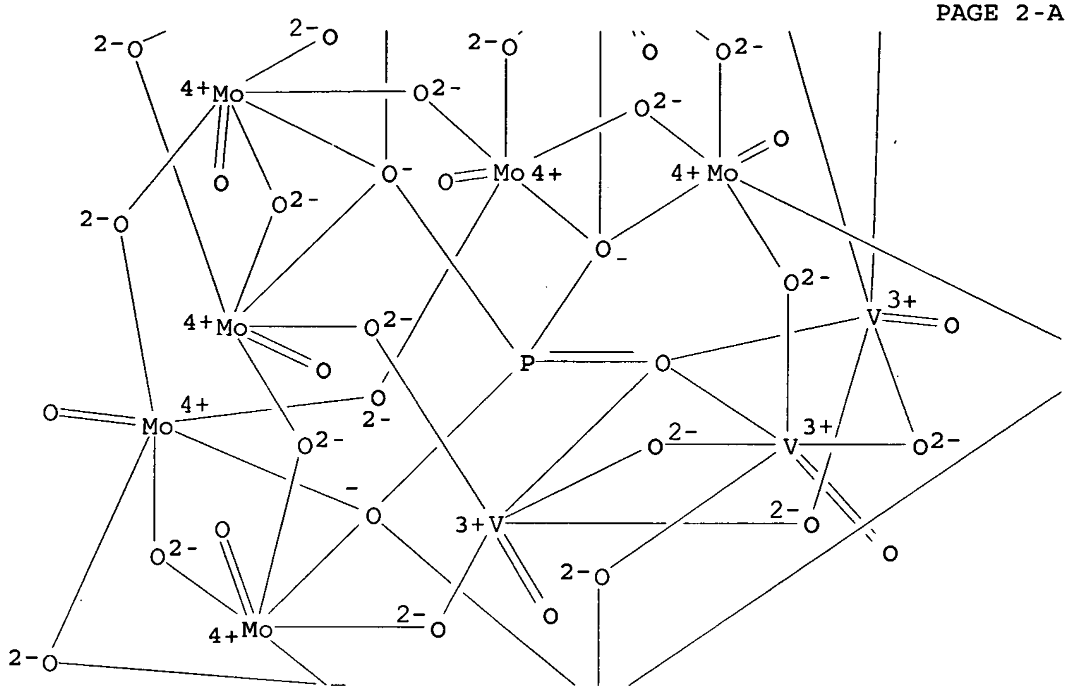

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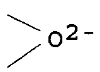
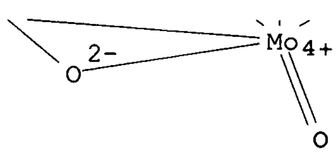


PAGE 3-A

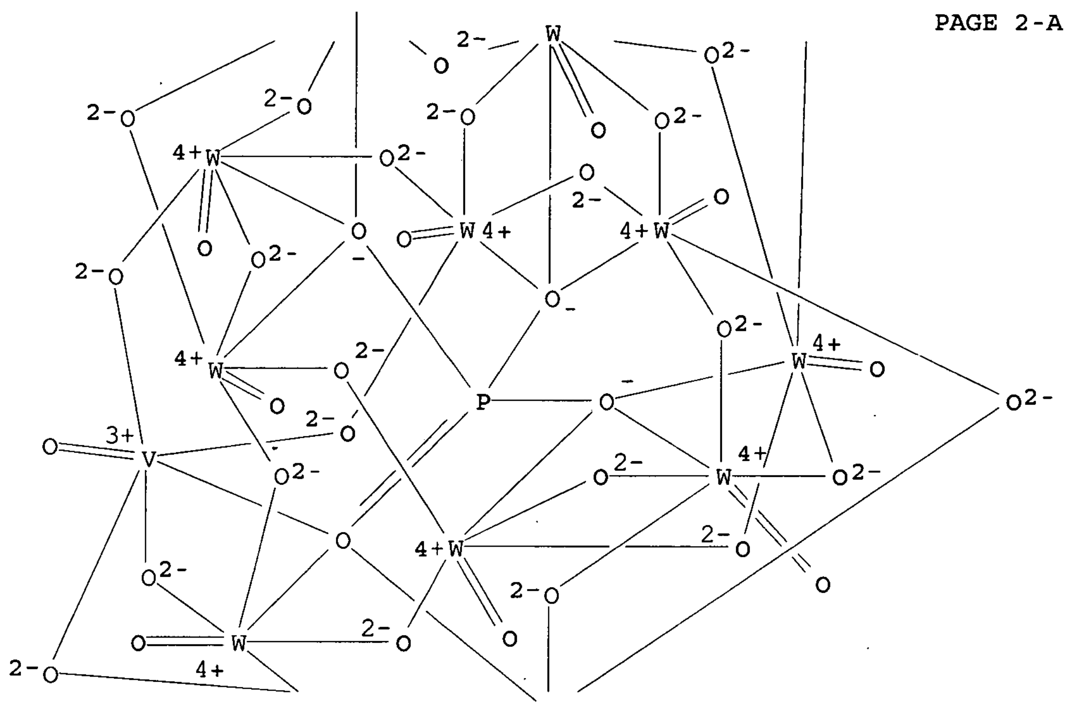


$\bullet 6\ H^+$

RN 12398-73-1 HCAPLUS
CN Vanadate(4-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



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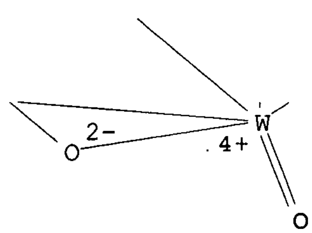
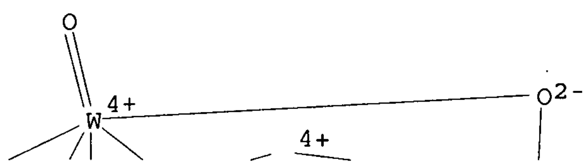


●4 H^{+}

RN 12411-60-8 HCAPLUS
CN Tungstate(3-), (octa-μ-oxohexaoxohexamolybdate)hexadeca-μ-oxohexaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]hexa-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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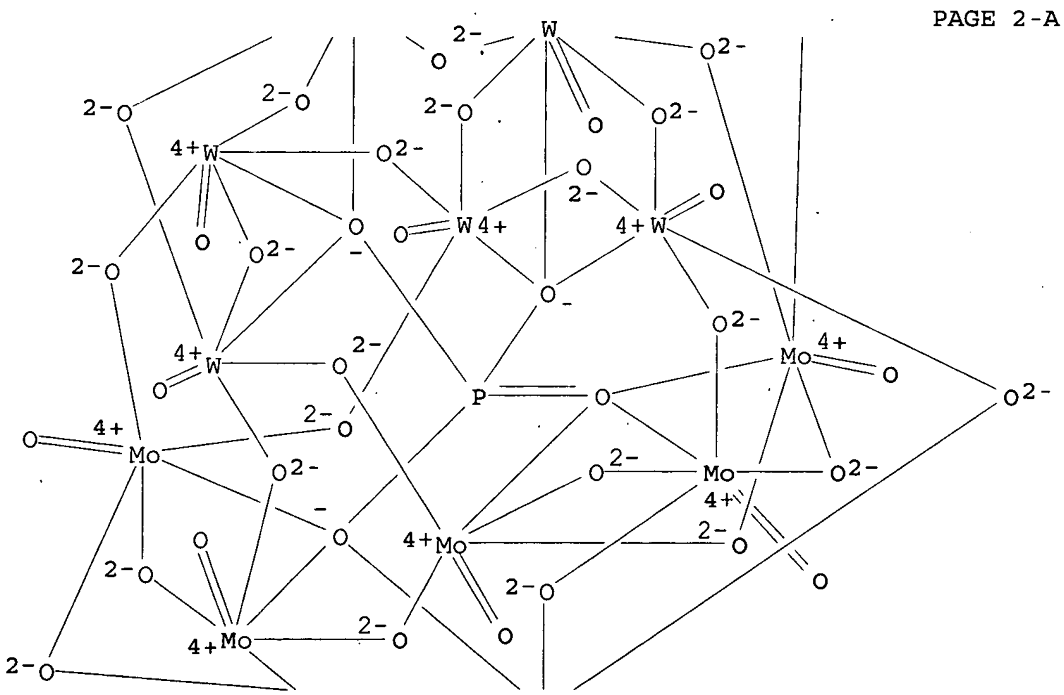
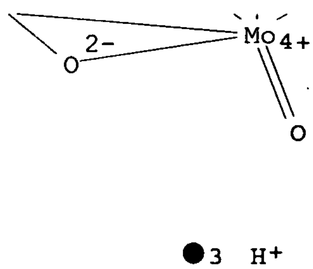


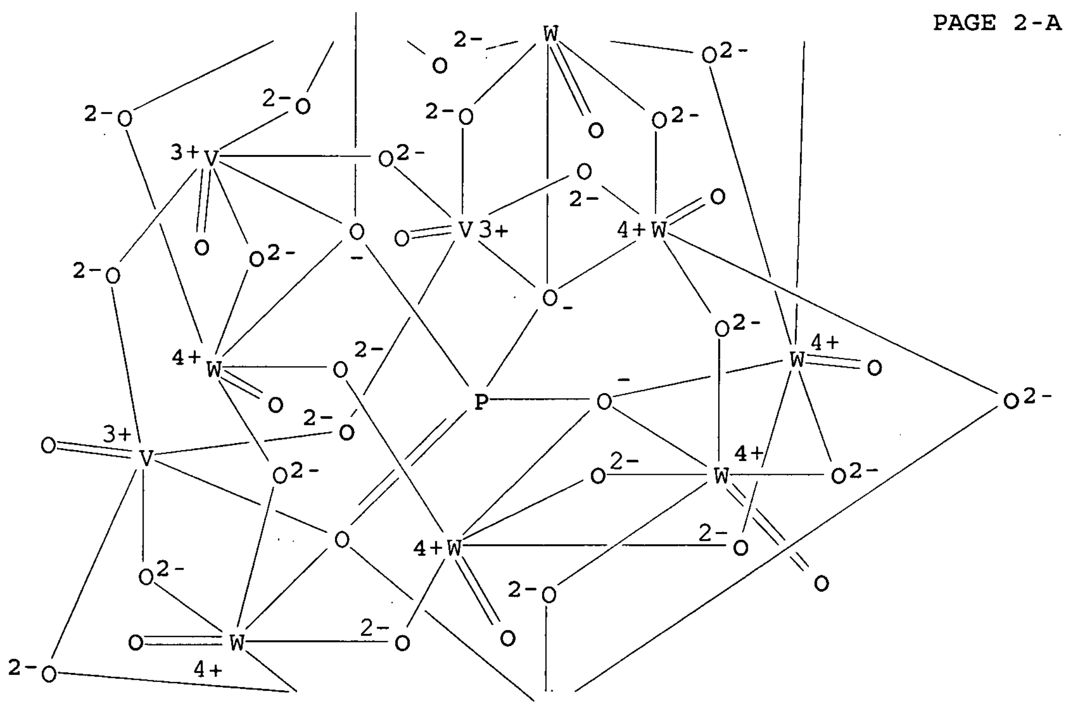
PAGE 3-A

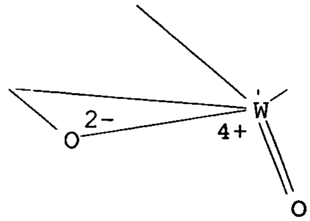


RN 12786-62-8 HCAPLUS
CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxononaoxononatungstate)[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tri-, hexahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A

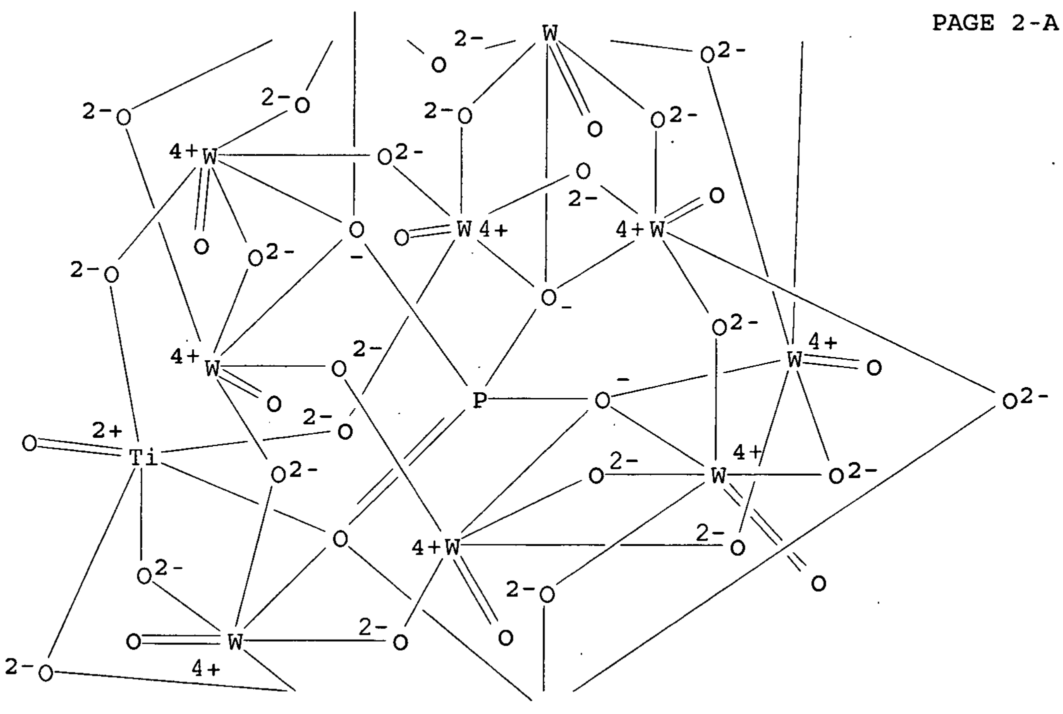


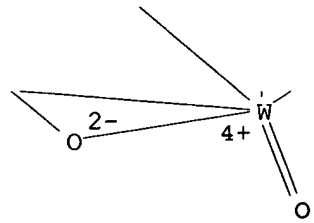


●6 H+

RN 104484-97-1 HCAPLUS
CN Titanate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, pentahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *





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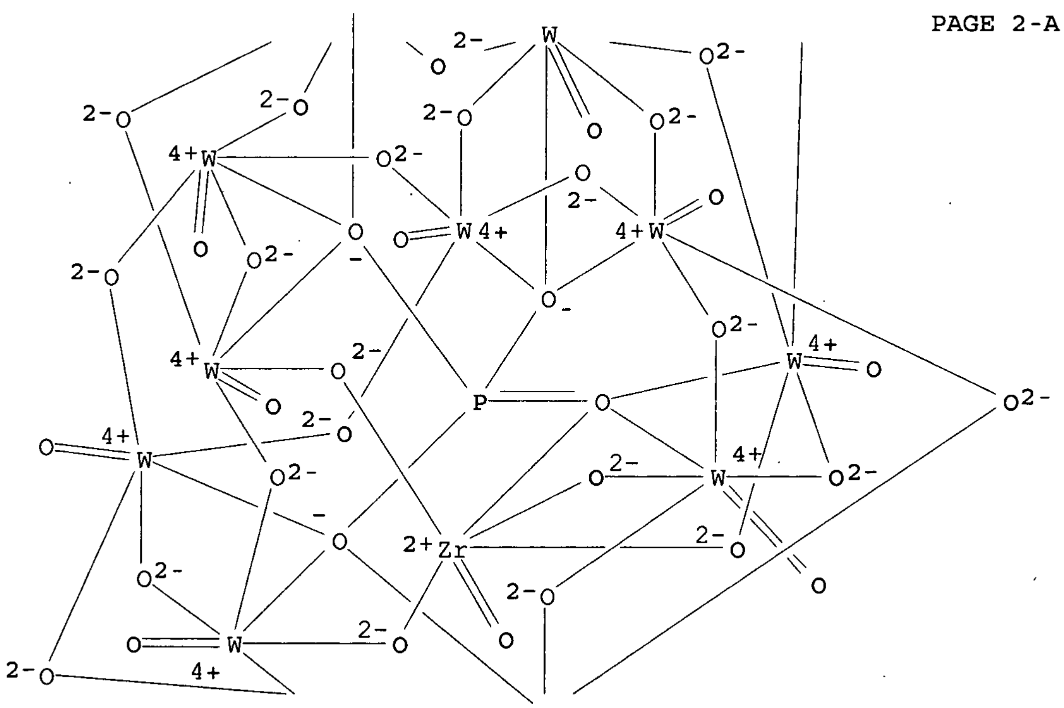
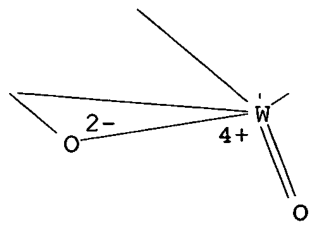
● 5 H^+

RN 146066-47-9 HCAPLUS
CN Zirconate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, pentahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *



PAGE 2-A



PAGE 3-A

●5 H^+

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 27 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:364007 HCAPLUS
DN 136:369510
TI Method for production of oxygen-containing aromatic compounds using mixed metal heteropoly acid catalysts
IN Sumida, Yasutaka; Wada, Masahiro; Mizuno, Noritaka
PA Nippon Shokubai Co., Ltd., Japan; Nippon Catalytic Chem. Ind.
SO Eur. Pat. Appl., 18 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	EP 1205462	A1	20020515	EP 2001-126376	20011107	<--
	EP 1205462	B1	20040721			
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR					
	JP 2002205969	A2	20020723	JP 2001-337396	20011102	<--
PRAI	JP 2000-343673	A	20001110	<--		

OS CASREACT 136:369510
AB A method is described for oxidizing aromatic compds. possessing at least one alkyl substituent by using a polyoxometalate catalyst which avoids the presence of corrosive bromine ions, remains stable without decomposition even in an oxidizing atmospheric, and permits reclamation. An aromatic compound possessing at least one alkyl substituent is oxidized by using a polyoxometalate catalyst in which the heteroatom is selected from phosphorus, silicon, and germanium and the primary metal is selected from molybdenum, tungsten, vanadium, and niobium. The Keggin type heteropoly acid possesses two defective structure sites which are occupied by an element of Periods 4-6 of Groups IB, VA, VIIA, and VIII in the Periodic Table of the Elements.
IC ICM C07C045-36
ICS C07C051-265
CC 25-17 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
Section cross-reference(s): 45, 78
IT **10421-48-4**, Ferric **nitrate**
RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(cocatalyst with metal deficient tungstosilicate heteropoly acids for oxidation of alkyl aromatic compds.)
IT 64684-57-7P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT

(Reactant or reagent)
(preparation and reaction with ferric **nitrate** to give oxidation catalyst for alkyl aromatic compds.)

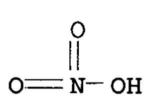
IT 7439-98-7DP, Molybdenum, heteropolyoxometalates 7440-03-1DP, Niobium, heteropolyoxometalates 7440-33-7DP, Tungsten, heteropolyoxometalates 7440-62-2DP, Vanadium, heteropolyoxometalates **10141-05-6DP**, Cobalt(II) **nitrate**, reaction products with γ-tungstosilicate and tetrabutylammonium **nitrate** 10377-66-9DP, Manganese(II) **nitrate**, reaction products with γ-tungstosilicate and tetrabutylammonium **nitrate** **13138-45-9DP**, Nickel(II) **nitrate**, reaction products with γ-tungstosilicate and tetrabutylammonium **nitrate** 13718-26-8DP, Sodium vanadate, reaction products with γ-tungstosilicate and tetrabutylammonium **nitrate** 16903-35-8DP, Chloroauric acid, reaction products with γ-tungstosilicate and tetrabutylammonium **nitrate** **102073-48-3DP**, reaction products with transition metal salts and tetrabutylammonium **nitrate** 214201-54-4P 214201-58-8P **219995-42-3P** 425375-79-7P, Cobalt potassium tungsten oxide silicate **425429-58-9P**
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation of oxygen containing aromatic compds. by oxidation of alkyl aromatic compds. using mixed metal **heteropoly** acid catalysts)

IT 1941-27-1, Tetrabutylammonium **nitrate**
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of oxygen containing aromatic compds. by oxidation of alkyl aromatic compds. using mixed metal heteropoly acid catalysts)

IT 102073-48-3P 425429-59-0P
RL: CAT (Catalyst use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(preparation, cocatalyst with ferric **nitrate** and reaction with transition metal salts to give oxidation catalysts for alkyl aromatic compds.)

IT **10421-48-4**, Ferric **nitrate**
RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(cocatalyst with metal deficient tungstosilicate heteropoly acids for oxidation of alkyl aromatic compds.)

RN 10421-48-4 HCAPLUS
CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)

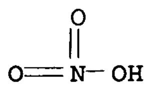


●1/3 Fe(III)

IT **10141-05-6DP**, Cobalt(II) **nitrate**, reaction products with γ-tungstosilicate and tetrabutylammonium **nitrate** **13138-45-9DP**, Nickel(II) **nitrate**, reaction products with γ-tungstosilicate and tetrabutylammonium **nitrate** **102073-48-3DP**, reaction products with transition metal salts and tetrabutylammonium **nitrate** **219995-42-3P**

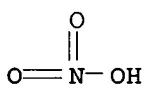
425429-58-9P
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation of oxygen containing aromatic compds. by oxidation of alkyl aromatic compds.
using mixed metal **heteropoly** acid catalysts)

RN 10141-05-6 HCAPLUS
CN Nitric acid, cobalt(2+) salt (8CI, 9CI) (CA INDEX NAME)



●1/2 Co(II)

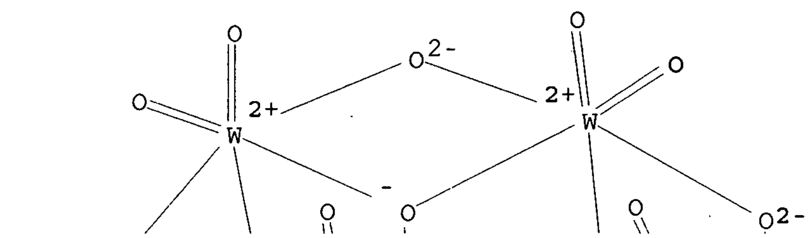
RN 13138-45-9 HCAPLUS
CN Nitric acid, nickel(2+) salt (8CI, 9CI) (CA INDEX NAME)



●1/2 Ni(II)

RN 102073-48-3 HCAPLUS
CN Tungstate(8-), [μ10-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO''':κO''']]oc
tadeca-μ-oxotetradecaoxodeca-, octapotassium (9CI) (CA INDEX NAME)

PAGE 1-A



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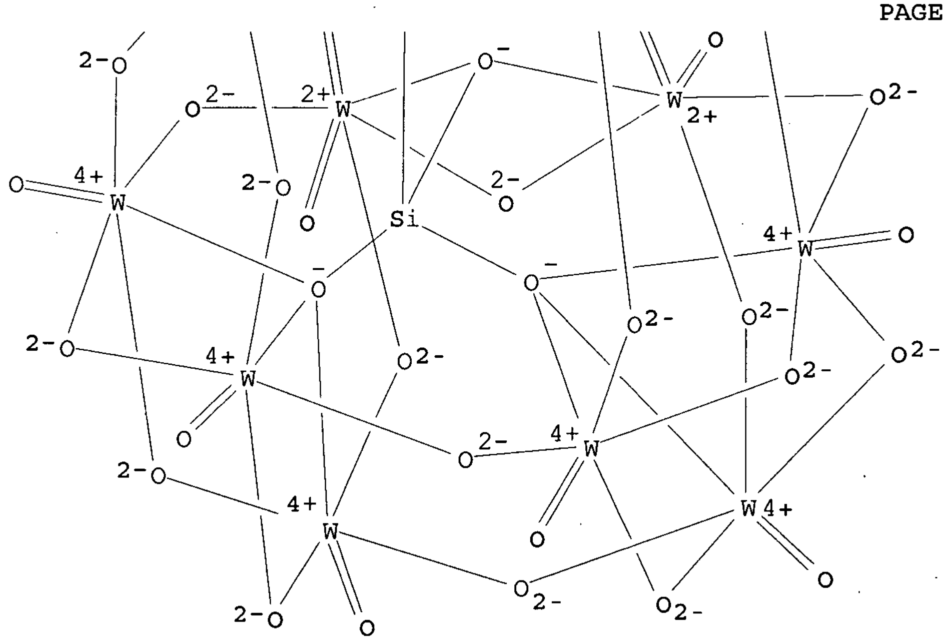

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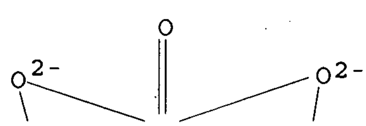
● 8 K^+

RN 219995-42-3 HCAPLUS
CN 1-Butanaminium, N,N,N-tributyl-, (diaquadi-μ-oxodiferrate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':κO''']]docosa-μ-oxodecaoxodecatungstate(6-) (6:1) (9CI) (CA INDEX NAME)

CM 1

CRN 219995-41-2
CMF Fe2 H4 O40 Si W10
CCI CCS

PAGE 1-B



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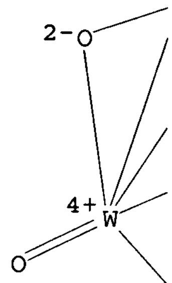

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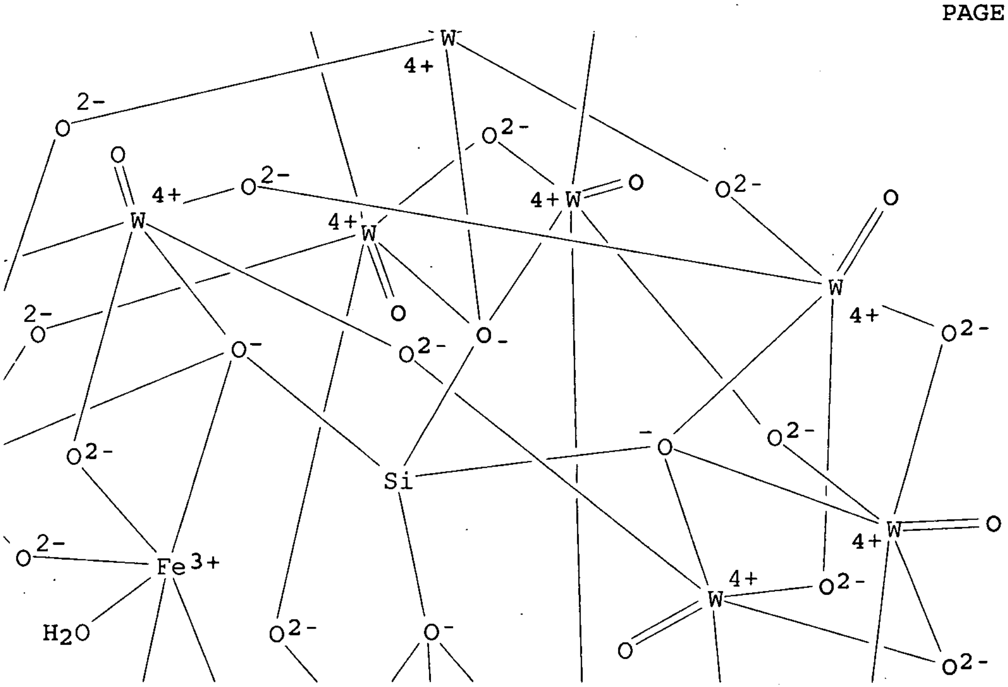

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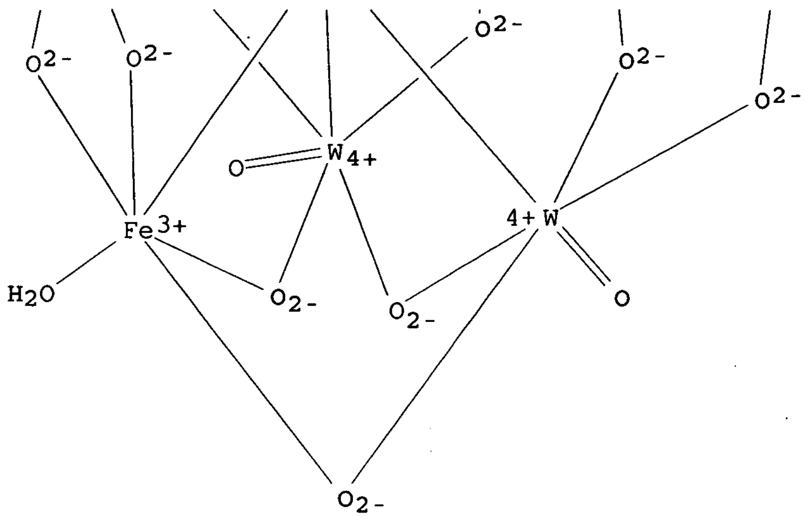
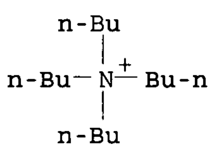


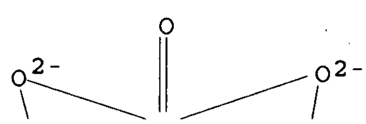
CM 2

CRN 10549-76-5
CMF C16 H36 N



RN 425429-58-9 HCAPLUS
CN Tungstate(6-), (diaquadi-μ-oxodimanganate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]docosa-μ-oxodecaoxodeca-, hexapotassium (9CI) (CA INDEX NAME)

PAGE 1-B



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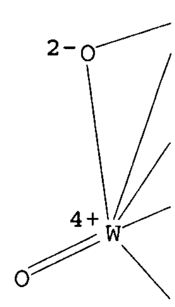

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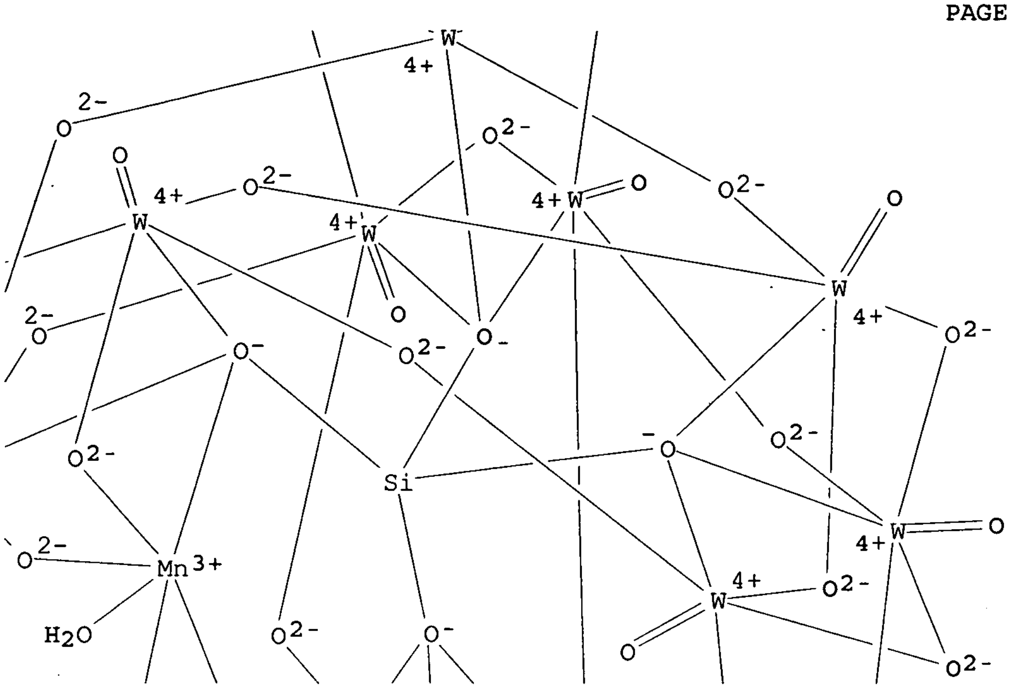
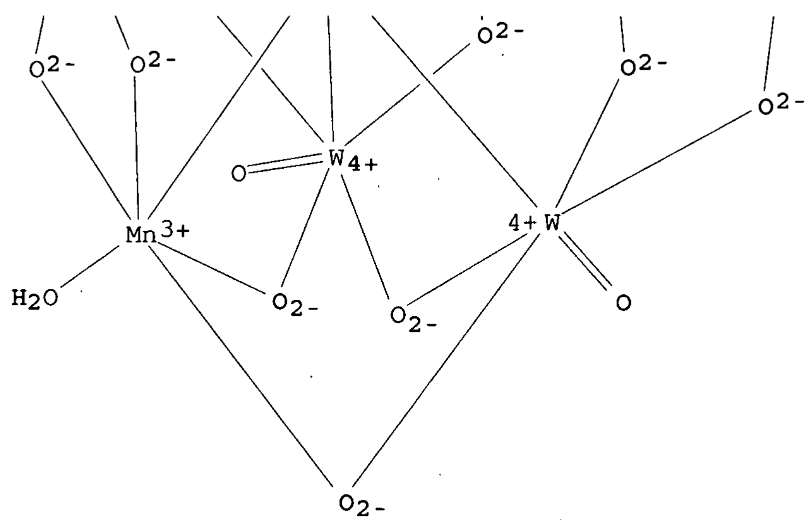


PAGE 3-B



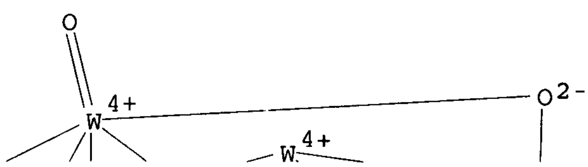
PAGE 4-A

●6 K^+

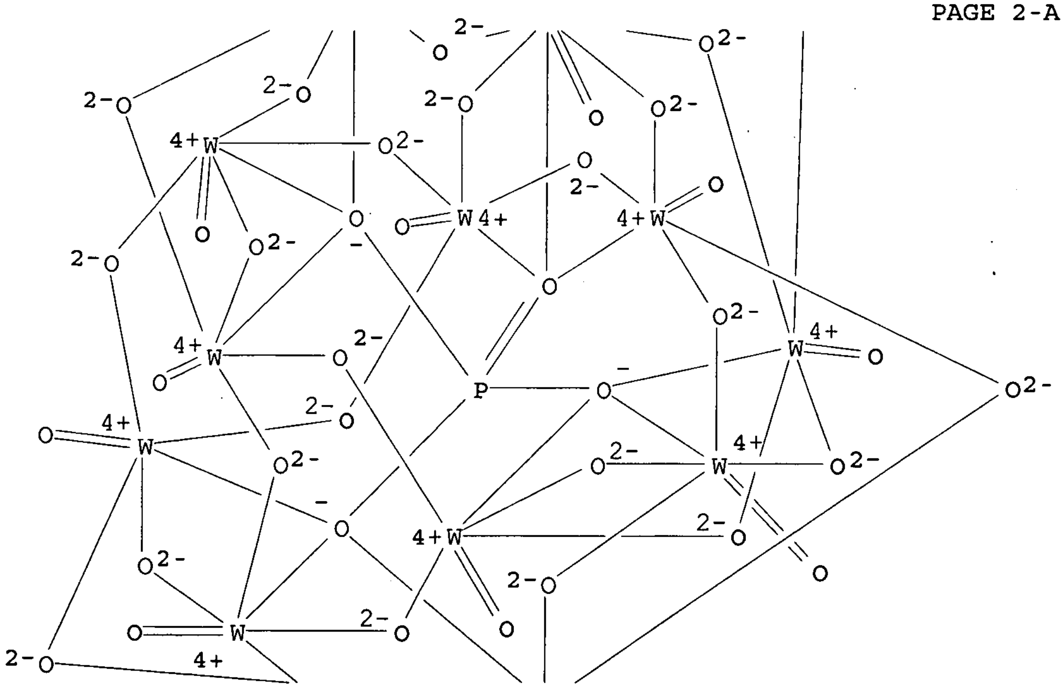
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 28 OF 70 HCAPLUS
AN 2002:245400 HCAPLUS
DN 137:201115
TI Hydroxylation of phenol catalyzed by copper Keggin-type heteropoly compounds with hydrogen peroxide
AU Zhang, Hanpeng; Zhang, Xiaoming; Ding, Yong; Yan, Liang; Ren, Tong; Suo, Jishuan
CS State Key Laboratory for Oxo Synthesis and Selective Oxidation, Lanzhou Institute of Chemical Physics, The Chinese Academy of Sciences, Lanzhou, 730000, Peop. Rep. China
SO New Journal of Chemistry (**2002**), 26(4), 376-377
CODEN: NJCHE5; ISSN: 1144-0546
PB Royal Society of Chemistry
DT Journal
LA English
OS CASREACT 137:201115
AB A novel catalytic process for the oxidation of phenol to dihydroxybenzene with hydrogen peroxide was developed in which copper-12-silicotungstic acid was used as catalyst in aqueous solution The maximal conversion of phenol is ca. 39%, which is much higher than the results in acetonitrile reported previously.
CC 25-10 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
IT 142-71-2, Cupric acetate **1343-93-7**, 12-Tungstophosphoric acid **3251-23-8**, Cupric **nitrate** 7447-39-4, Cupric chloride, uses 7758-89-6, Cuprous chloride 7758-98-7, Copper sulfate, uses **12026-57-2**, 12-Molybdophosphoric acid **12027-12-2**, 12-Molybdosilicic acid **12027-38-2** 114027-27-9 454472-59-4
RL: **CAT (Catalyst use)**; USES (Uses)
(hydroxylation of phenol catalyzed by copper Keggin-type **heteropoly** compds. with hydrogen peroxide)
IT **1343-93-7**, 12-Tungstophosphoric acid **3251-23-8**, Cupric **nitrate** **12026-57-2**, 12-Molybdophosphoric acid **12027-12-2**, 12-Molybdosilicic acid **12027-38-2**
RL: **CAT (Catalyst use)**; USES (Uses)
(hydroxylation of phenol catalyzed by copper Keggin-type **heteropoly** compds. with hydrogen peroxide)
RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



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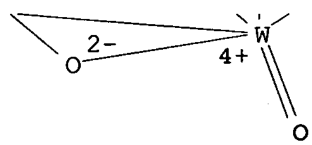
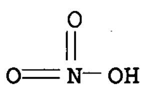


●3 H^+

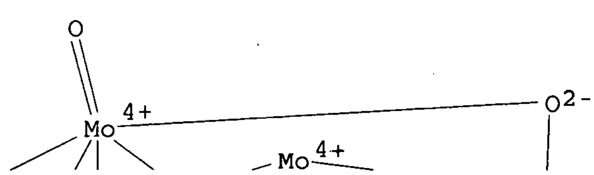
RN 3251-23-8 HCAPLUS
CN Nitric acid, copper(2+) salt (8CI, 9CI) (CA INDEX NAME)



●1/2 Cu(II)

RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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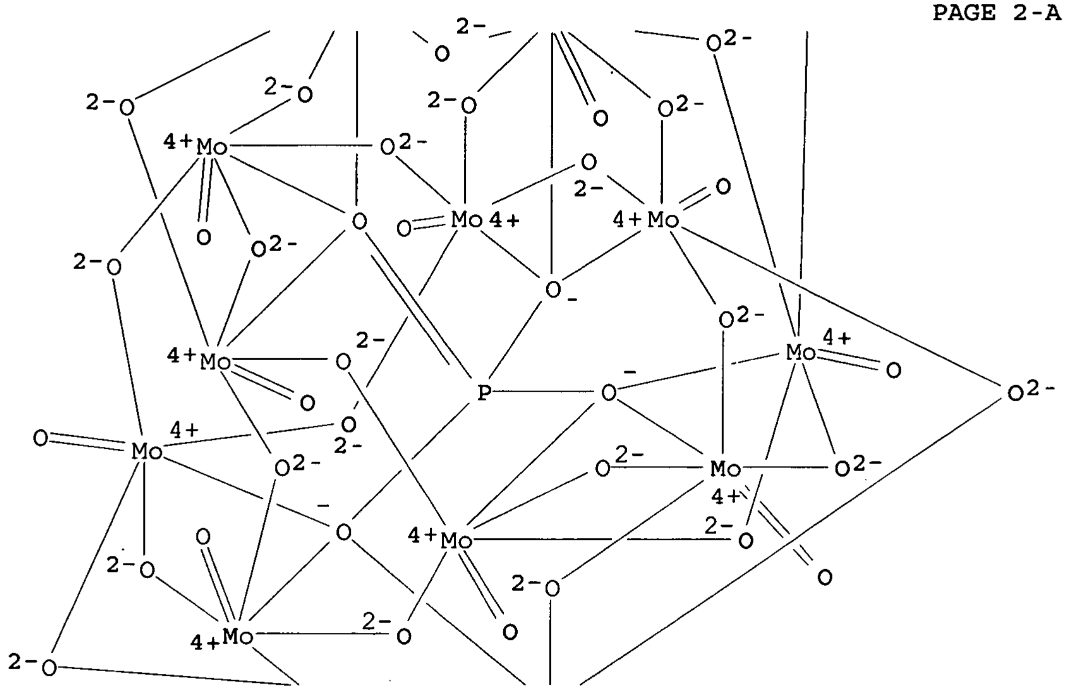
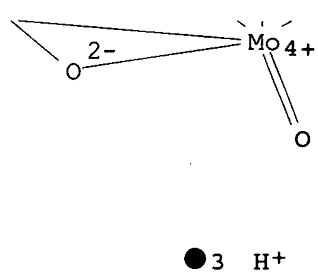
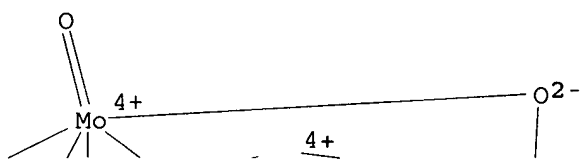


PAGE 3-A



RN 12027-12-2 HCAPLUS
CN Molybdate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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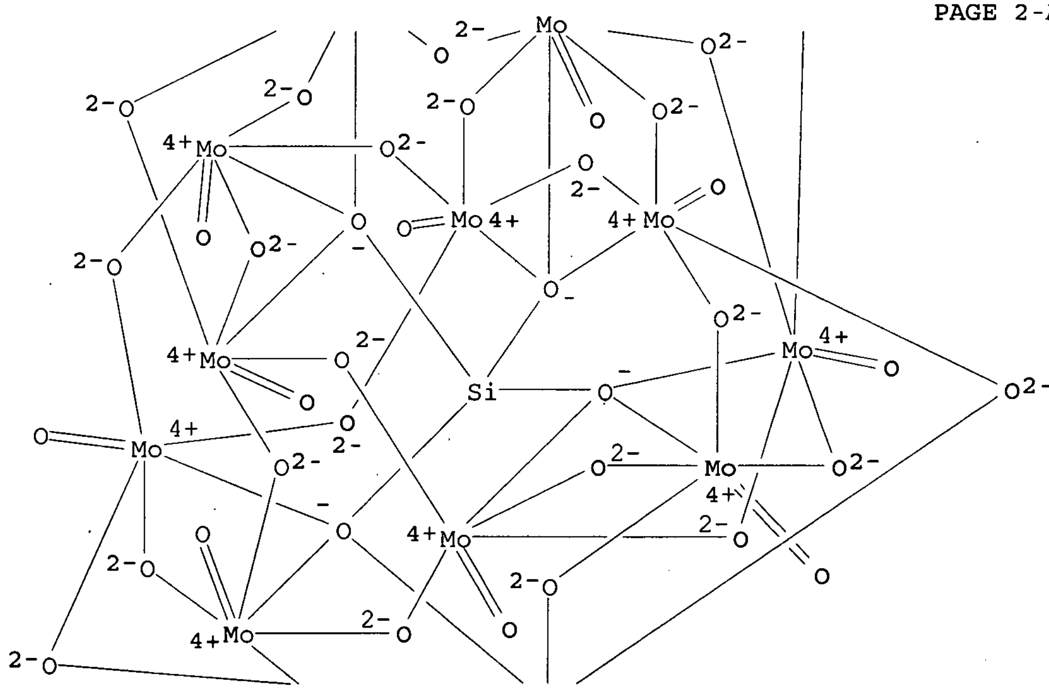
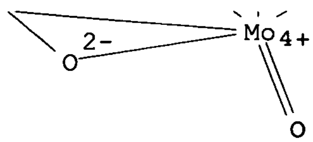
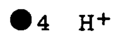


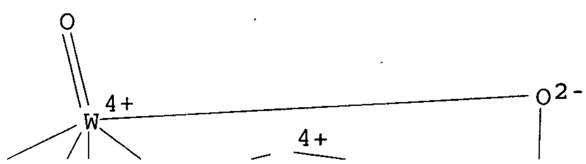
PAGE 3-A



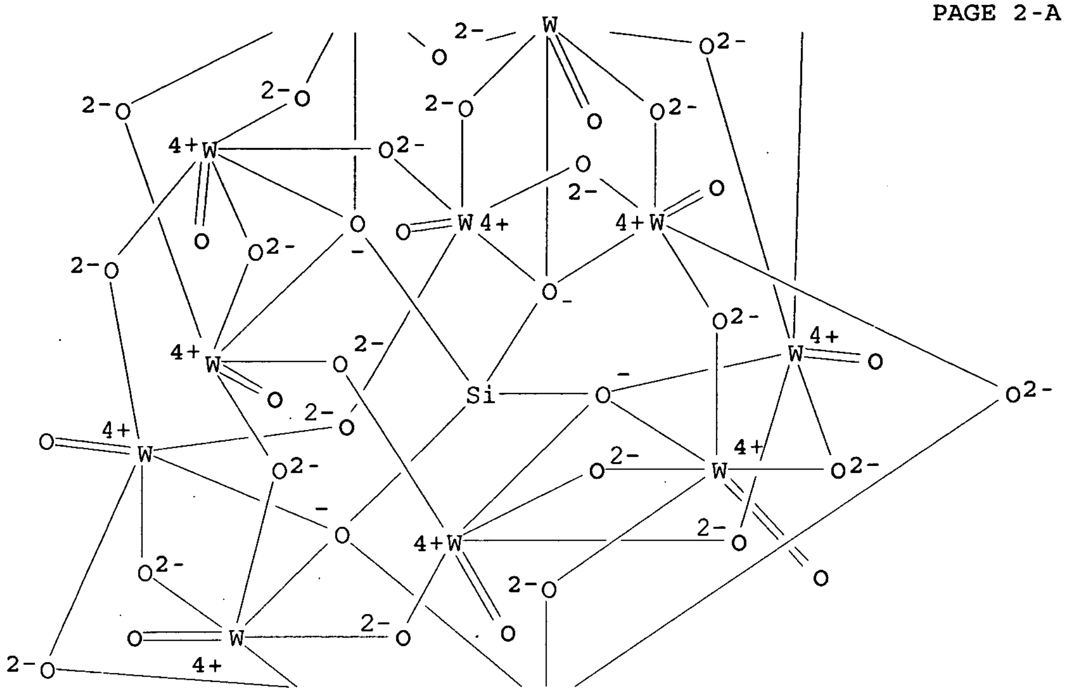


RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

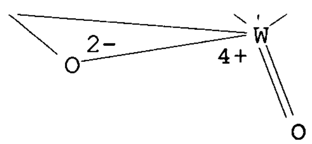
PAGE 1-A



PAGE 2-A



PAGE 3-A



●4 H+

RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 29 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:168805 HCAPLUS
DN 137:95992
TI Isomerization of n-Hexane over Silica-Supported Heteropoly Acids Promoted by the Reduced Ce-Ni Oxides
AU Kuang, Wenxing; Rives, Alain; Ben Tayeb, Bouchta Ouled; Fournier, Michel; Hubaut, Robert
CS Laboratoire de Catalyse Heterogene et Homogene, UPRESA 8010, Universite des Sciences et Technologies de Lille, Villeneuve d'Ascq, 59655, Fr.
SO Journal of Colloid and Interface Science (**2002**), 248(1), 123-129
CODEN: JCISA5; ISSN: 0021-9797
PB Academic Press
DT Journal
LA English

AB The structure and catalytic properties of silica-supported heteropoly acids promoted by the reduced Ce-Ni oxides are 1st studied by using chemical anal. XRD, FT-Raman, XPS, EPR, TG, surface area measurements, and microreactor test. Silica-supported heteropoly acids have isomerization activity, but are very easy to deactivate by coke deposition. With the promotion of the reduced Ce-Ni oxides, however, the better activity and the higher selectivity to isomers could be obtained, suggesting that the reduced Ce-Ni oxides really have hydrogenating/dehydrogenating functions. Also, the presence of the reduced Ce-Ni oxides is not only beneficial for eliminating the coke deposition, but also effective for maintaining the structure of silica-supported heteropoly acids during reaction. The effect of the **composition** of the mech. mixts. of silica-supported heteropoly acids and the Ce-Ni oxides on the catalytic properties was explored. (c) 2002 Academic Press.

CC 51-6 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 45, 66

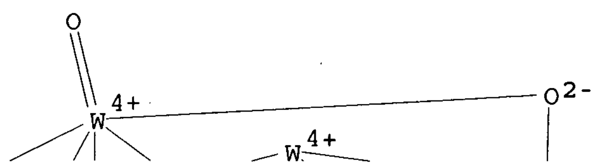
IT **1343-93-7**, 12-Phosphotungstic acid **12027-38-2**, 12-Tungstosilicic acid **12297-12-0**, 12-Tungstoboric acid 134883-91-3, Cerium nickel oxide
RL: **CAT (Catalyst use)**; PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(isomerization of n-hexane over silica-supported **heteropoly** acids promoted by reduced Ce-Ni oxides)

IT **1343-93-7**, 12-Phosphotungstic acid **12027-38-2**, 12-Tungstosilicic acid **12297-12-0**, 12-Tungstoboric acid
RL: **CAT (Catalyst use)**; PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(isomerization of n-hexane over silica-supported **heteropoly** acids promoted by reduced Ce-Ni oxides)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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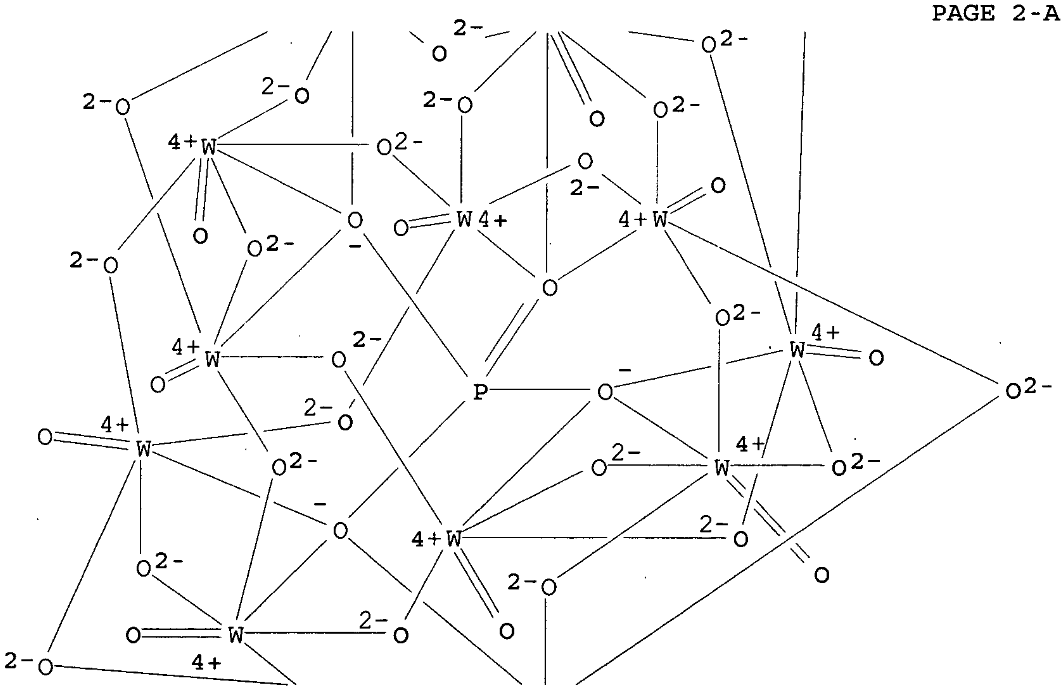
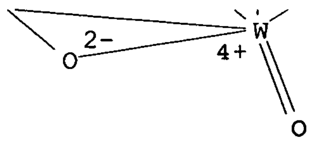
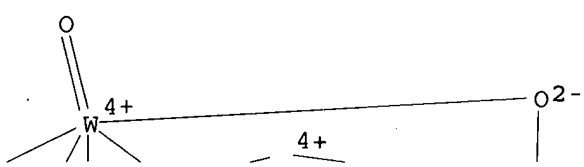


PAGE 3-A



RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp a.O':κO':κO':κO'':κO'':κO'':κO''':.kap pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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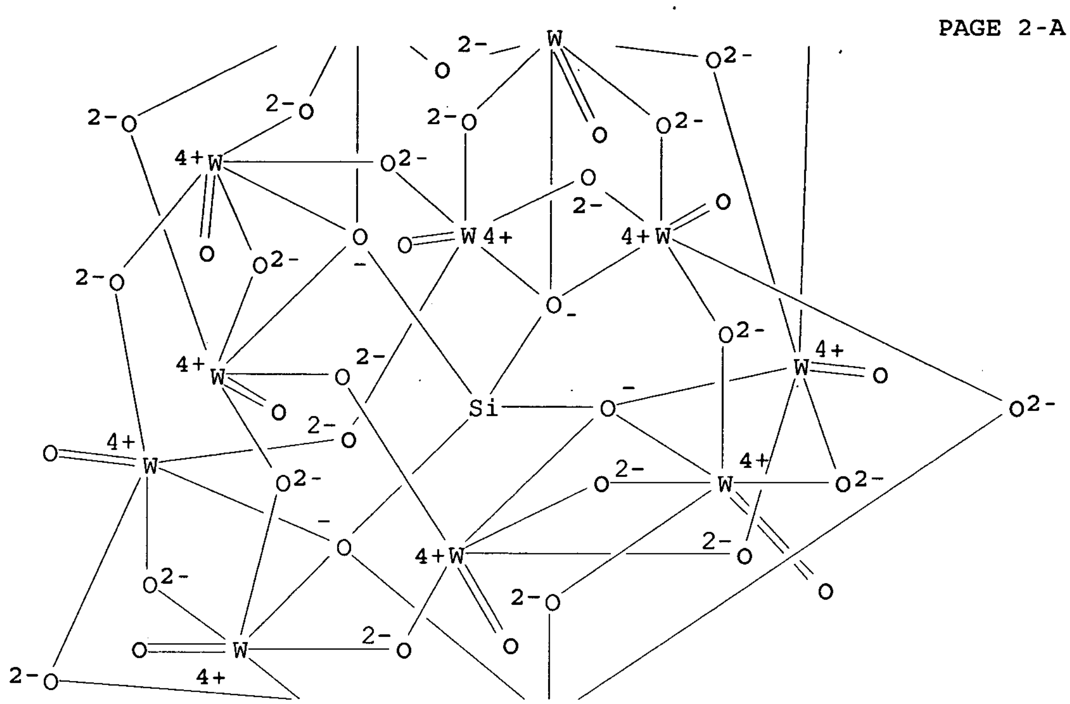
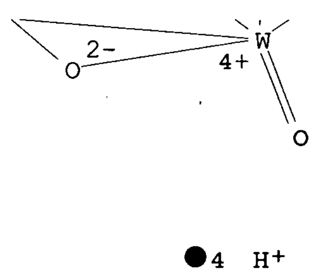
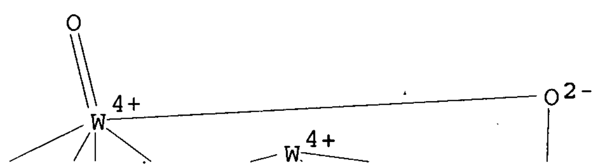


PAGE 3-A

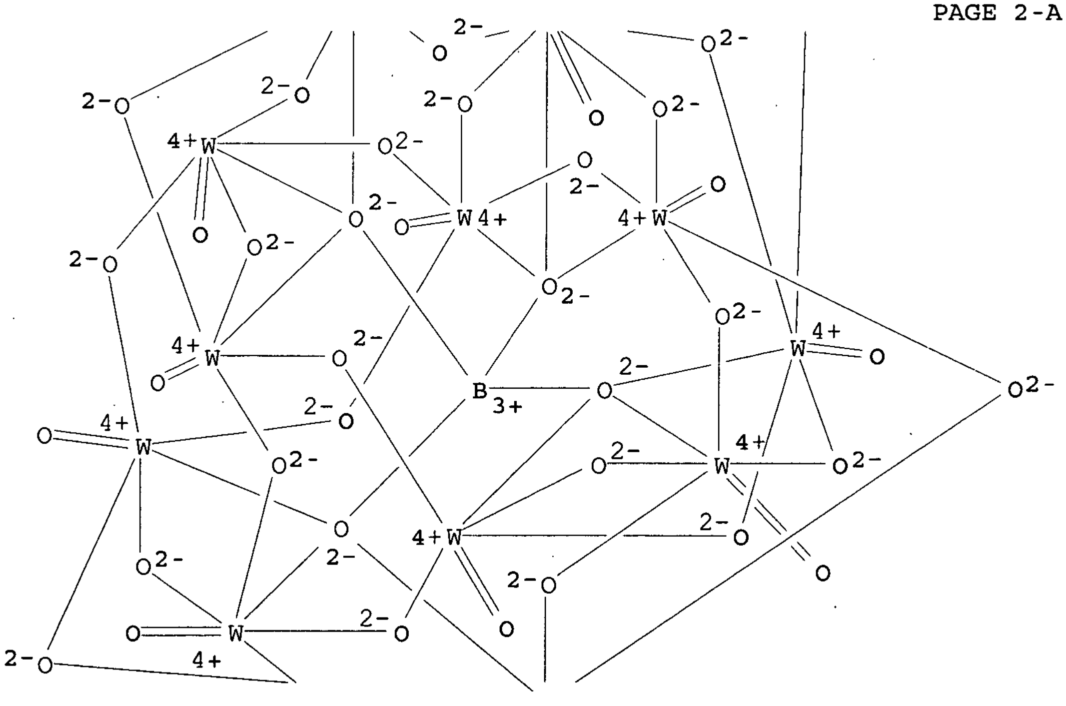


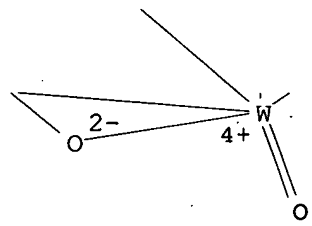
RN 12297-12-0 HCAPLUS
CN Tungstate(5-), tetracosa-μ-oxododecaoxo[μ12-[tetrahydroxyborato(5-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, pentahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A





PAGE 3-A

● 5 H^+

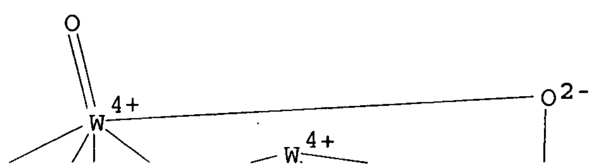
RE.CNT 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 30 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:148605 HCAPLUS
DN 136:184277
TI Epoxidation catalyst **compositions** and production methods for epoxy compounds
IN Sakamoto, Takaki; Park, Jong Jin
PA Kawamura Institute of Chemical Research, Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

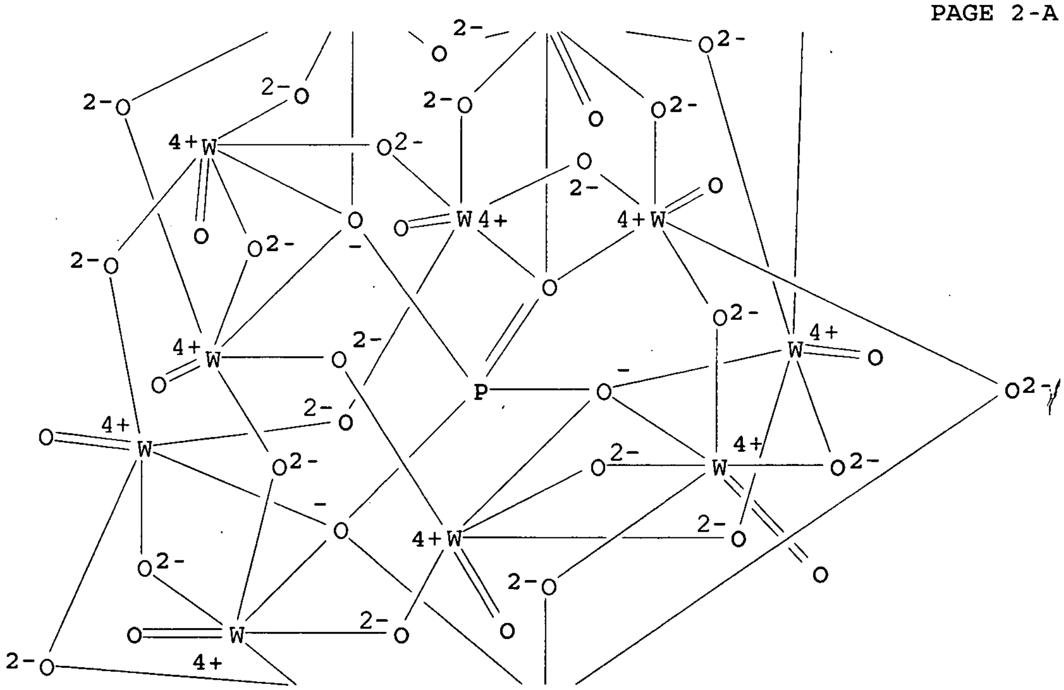
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002059007	A2	20020226	JP 2000-250965	20000822 <--
PRAI	JP 2000-250965		20000822 <--		

AB Olefins are epoxidized with H2O2 using catalysts containing W heteropolyacids and Mg(OH)2. Thus, 29 mg H3PW12O40, 25 mg Mg(OH)2, 0.411 g cyclohexene, 1.13 g 30% H2O2, and 2 mL MeOH were stirred 7 h at 70° under N to prepare cyclohexene oxide at selectivity >99%.
IC ICM B01J027-188
ICS C07D301-12; C07D303-04; C07D303-06; C07B061-00
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 27
IT 1309-42-8, Magnesium hydroxide **1343-93-7**
RL: **CAT (Catalyst use)**; USES (Uses)
(epoxidn. catalysts containing tungsten **heteropolyacids** and magnesium hydroxide for olefins with hydrogen peroxide)
IT **1343-93-7**
RL: **CAT (Catalyst use)**; USES (Uses)
(epoxidn. catalysts containing tungsten **heteropolyacids** and magnesium hydroxide for olefins with hydrogen peroxide)
RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

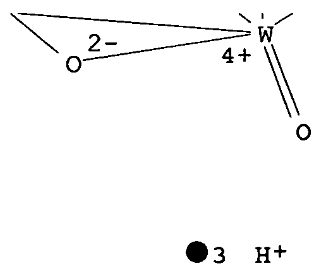
PAGE 1-A



PAGE 2-A



PAGE 3-A



L32 ANSWER 31 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:30744 HCAPLUS
DN 136:340390
TI Esterification of n-butanol with acetic acid in the presence of heteropoly acids with different structures and **compositions**
AU Timofeeva, M. N.; Matrosova, M. M.; Maksimov, G. M.; Likholobov, V. A.; Golovin, A. V.; Maksimovskaya, R. I.; Paukshtis, E. A.
CS Boreskov Institute of Catalysis, Siberian Division, Russian Academy of Sciences, Novosibirsk, 630090, Russia
SO Kinetics and Catalysis (Translation of Kinetika i Kataliz) (**2001**), 42(6), 791-795
CODEN: KICAA8; ISSN: 0023-1584
PB MAIK Nauka/Interperiodica Publishing
DT Journal
LA English
OS CASREACT 136:340390
AB The esterification reaction of 1-butanol with acetic acid ([BuOH]: [HOAc] = 1:15 mol/mol; 55°, 5% H2O) was studied in the presence of tungsten heteropoly acids of the Keggin (H3PW12O40, H4SiW12O40, H5PW11TiO40, H5PW11ZrO40, and H3PW11ThO39) and Dawson structure (α-H6P2W18O62, H6P2W21O71(H2O)3, H6As2W21O69(H2O), and H21B3W39O132). The reaction orders with respect to H6P2W21O71(H2O)3, H3PW12O40, and H6P2W18O69 are equal to 0.78, 1.00, and 0.97, resp. It was found that the reaction rate depends on the acidity, as well as on the structure and **composition** of heteropoly acids. The H21B3W39O132 heteropoly acid is most active, whereas the Keggin-structure heteropoly acids exhibit the lowest activities. Of the Keggin structure heteropoly acids, H5PW11ZrO40 exhibits the highest activity because of the presence of a Lewis acid site in its structure.
CC 23-17 (Aliphatic Compounds)
IT **12411-74-4**, Tungstophosphoric acid (α-H6P2W18O62)
154766-55-9, Tungstophosphoric acid trihydrate [H6P2W21O71(H2O)3]
RL: **CAT (Catalyst use)**; USES (Uses)
(Dawson-type **heteropolyacid**; esterification of 1-butanol with acetic acid in presence of **heteropoly** acids)
IT **1343-93-7**, Tungstophosphoric acid (H3PW12O40) **12027-38-2**, Tungstosilicic acid (H4SiW12O40) **104484-97-1**, Tungstotitanophosphoric acid (H5PW11TiO40) **146066-47-9**, Tungstozirconaphosphoric acid (H5PW11ZrO40) **406939-02-4**, Thorotungstophosphoric acid (H3PW11ThO39)
RL: **CAT (Catalyst use)**; USES (Uses)
(Keggin-type **heteropolyacid**; esterification of 1-butanol with acetic acid in presence of **heteropoly** acids)
IT **12411-74-4**, Tungstophosphoric acid (α-H6P2W18O62)
154766-55-9, Tungstophosphoric acid trihydrate [H6P2W21O71(H2O)3]
RL: **CAT (Catalyst use)**; USES (Uses)

(Dawson-type **heteropolyacid**; esterification of 1-butanol with acetic acid in presence of **heteropoly** acids)

RN 12411-74-4 HCAPLUS

CN Tungstate(6-), hexatriaconta-μ-oxooctadecaoxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':κO'':.kapp a.O''':κO''']]octadeca-, hexahydrogen (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 154766-55-9 HCAPLUS

CN Tungstate(6-), triaquadotetraconta-μ-oxoheneicosaoxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':.kappa.O'':κO''':κO''']]heneicosa-, hexahydrogen (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **1343-93-7**, Tungstophosphoric acid (H3PW12O40) **12027-38-2**, Tungstosilicic acid (H4SiW12O40) **104484-97-1**, Tungstotitanophosphoric acid (H5PW11TiO40) **146066-47-9**, Tungstozirconaphosphoric acid (H5PW11ZrO40) **406939-02-4**, Thorotungstophosphoric acid (H3PW11ThO39)

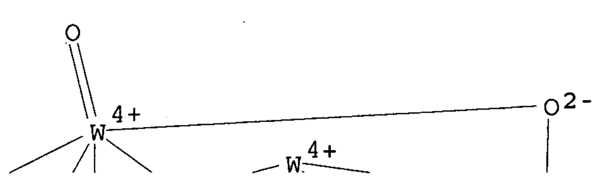
RL: **CAT (Catalyst use)**; USES (Uses)

(Keggin-type **heteropolyacid**; esterification of 1-butanol with acetic acid in presence of **heteropoly** acids)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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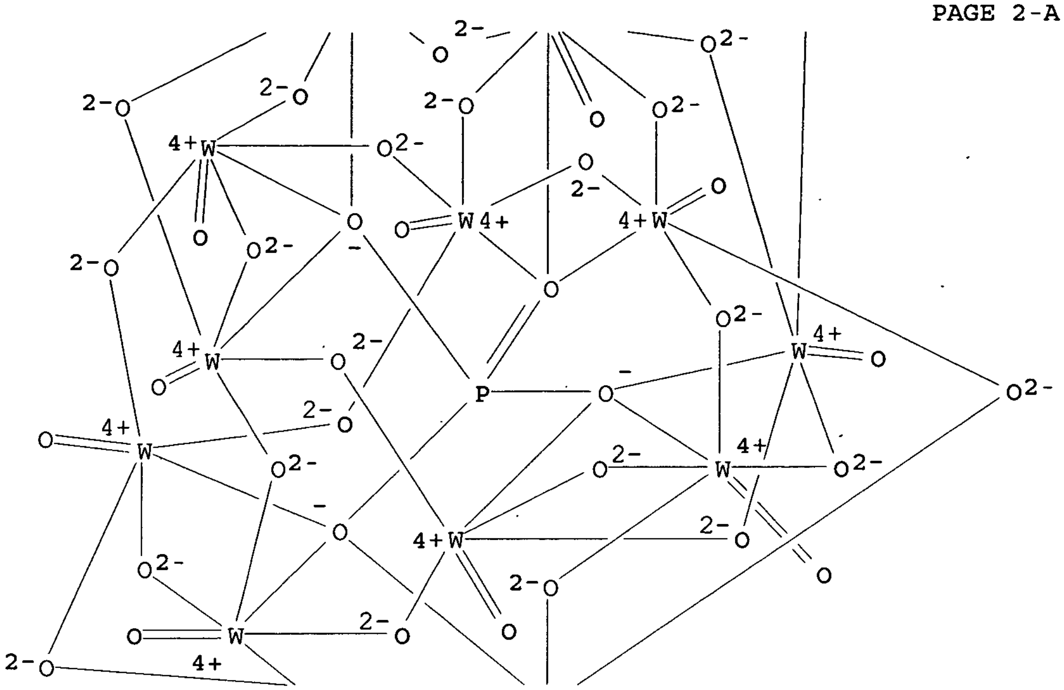

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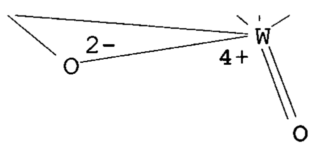
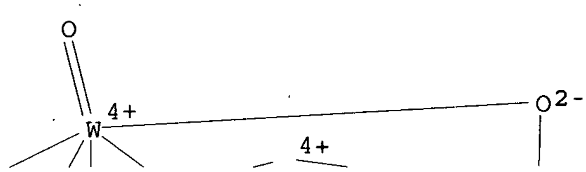


● 3 H^+

RN 12027-38-2 HCAPLUS

CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kappa.O':κO':κO':κO'':κO'':κO'':κO''':.kappa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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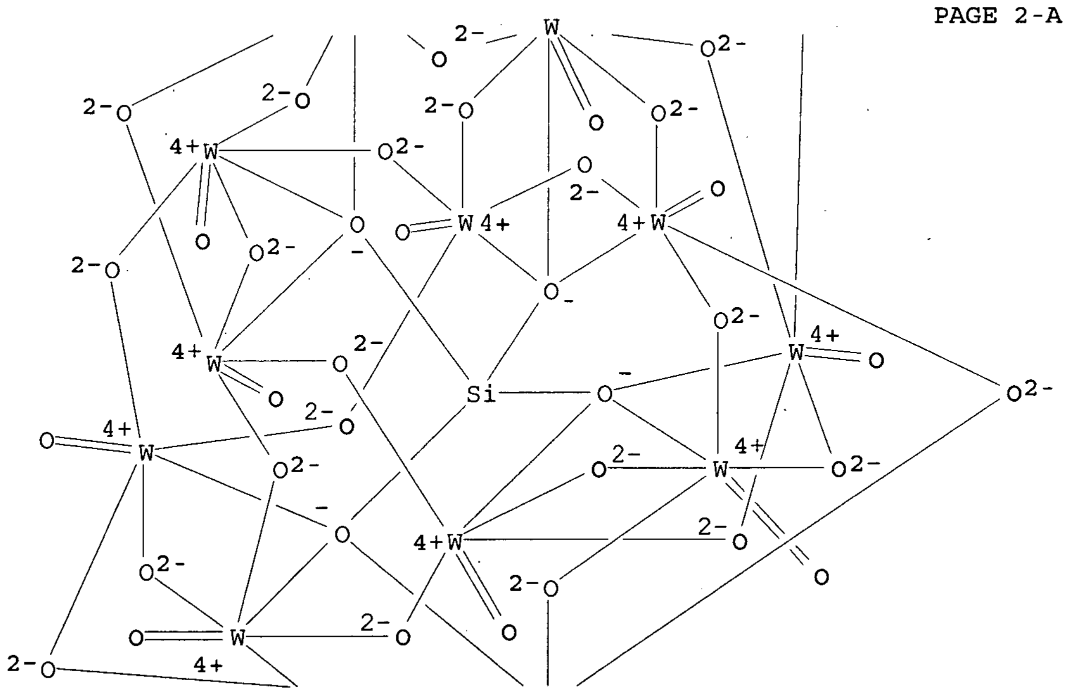

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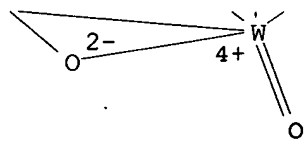
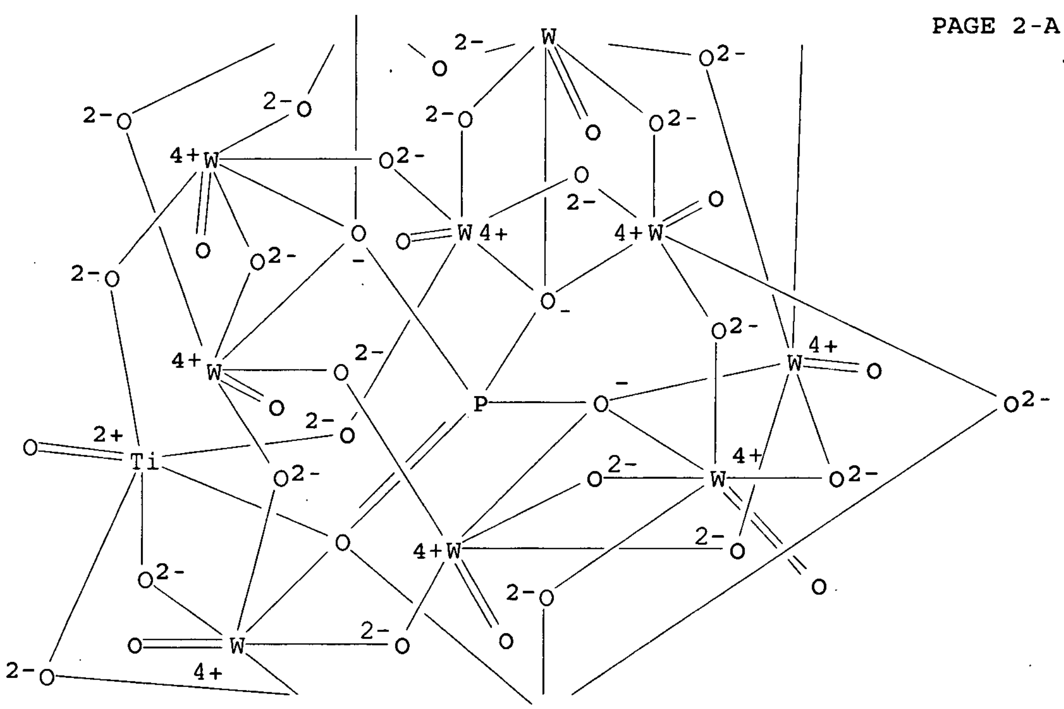


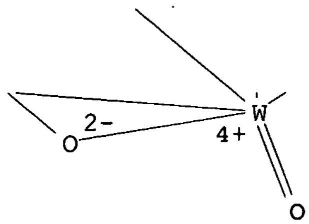
●4 H+

RN 104484-97-1 HCAPLUS
CN Titanate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, pentahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



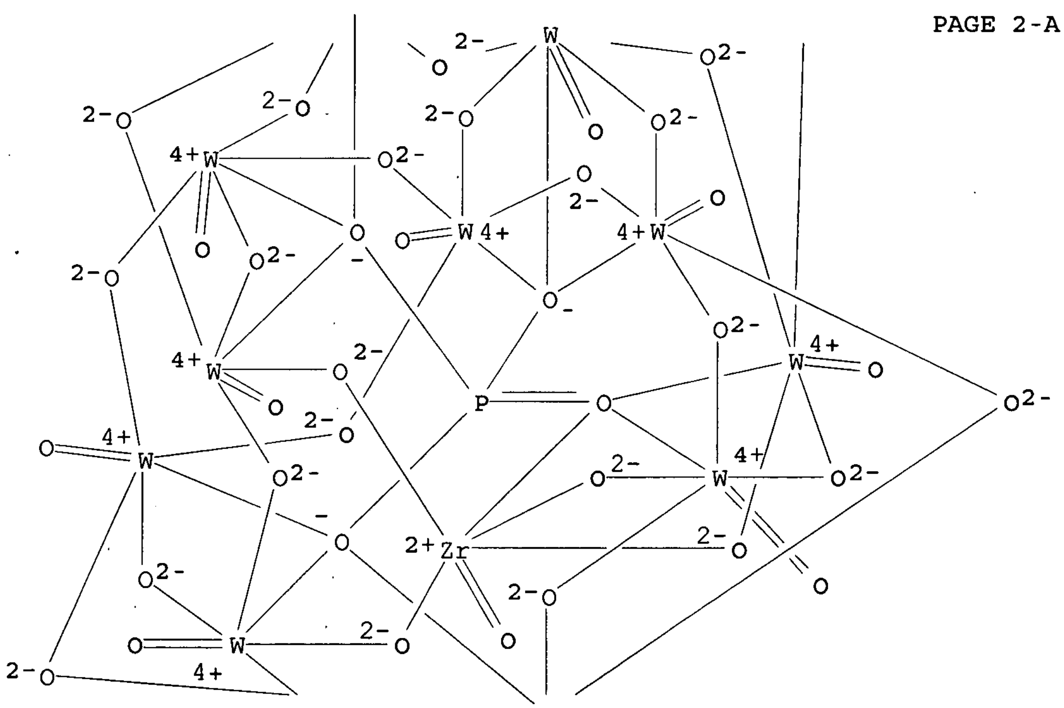


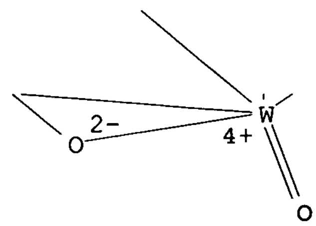
PAGE 3-A

RN 146066-47-9 HCAPLUS
CN Zirconate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, pentahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A

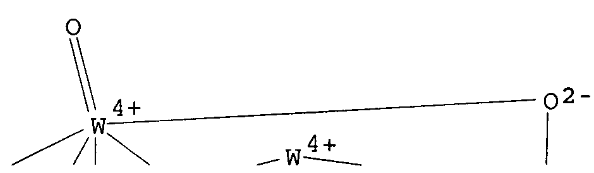




PAGE 3-A

RN 406939-02-4 HCAPLUS
CN Thorate(3-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':.kappa.O':κO'':κO'':κO'':κO''':κO''':κO''']]-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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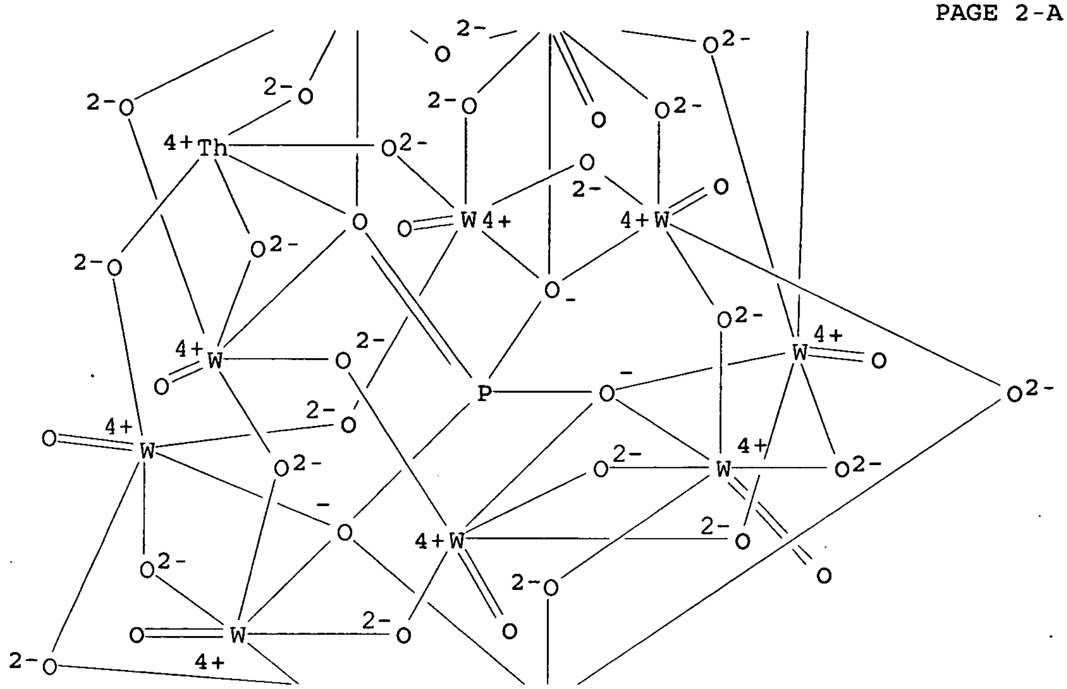

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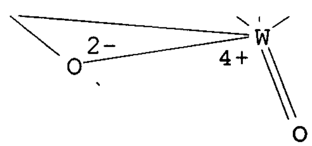

●3 H^+

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 32 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:10411 HCAPLUS
DN 136:55557
TI Synthesis of aliphatic esters from carboxylic acids and olefins using heteropoly acid catalysts
IN Ng, Flora T. T.; Te, Mure
PA BP Chemicals Limited, UK
SO PCT Int. Appl., 11 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

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PI    WO 2002000591        A1     20020103    WO 2001-GB2632          20010613 <--
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             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS,
             LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO,
             RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ,
             VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
             DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
             BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
PRAI GB 2000-15568         A      20000627  <--
```

AB A process for the preparation of lower aliphatic esters (e.g., Et acetate) comprises reacting a lower olefin (e.g., ethylene) with a saturated lower aliphatic monocarboxylic acid (e.g., acetic acid) in the presence of a supported catalyst **composition** comprising a silicon-containing heteropoly acid (e.g., silicotungstic acid) and a phosphorus-containing heteropoly acid (e.g., phosphotungstic acid).

IC ICM C07C067-04
ICS C07C069-02; C07C069-14

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 48, 67

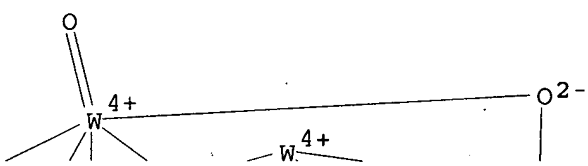
IT **1343-93-7**, 12-Tungstophosphoric acid **12026-57-2**, 12-Molybdophosphoric acid **12027-12-2**, 12-Molybdosilicic acid **12027-38-2**, 12-Tungstosilicic acid 12704-86-8 37340-70-8, Potassium tungstophosphate 39469-90-4 59088-14-1 142165-04-6
RL: **CAT (Catalyst use)**; USES (Uses)
(synthesis of aliphatic esters from carboxylic acids and olefins using **heteropoly** acid catalysts)

IT **1343-93-7**, 12-Tungstophosphoric acid **12026-57-2**, 12-Molybdophosphoric acid **12027-12-2**, 12-Molybdosilicic acid **12027-38-2**, 12-Tungstosilicic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(synthesis of aliphatic esters from carboxylic acids and olefins using **heteropoly** acid catalysts)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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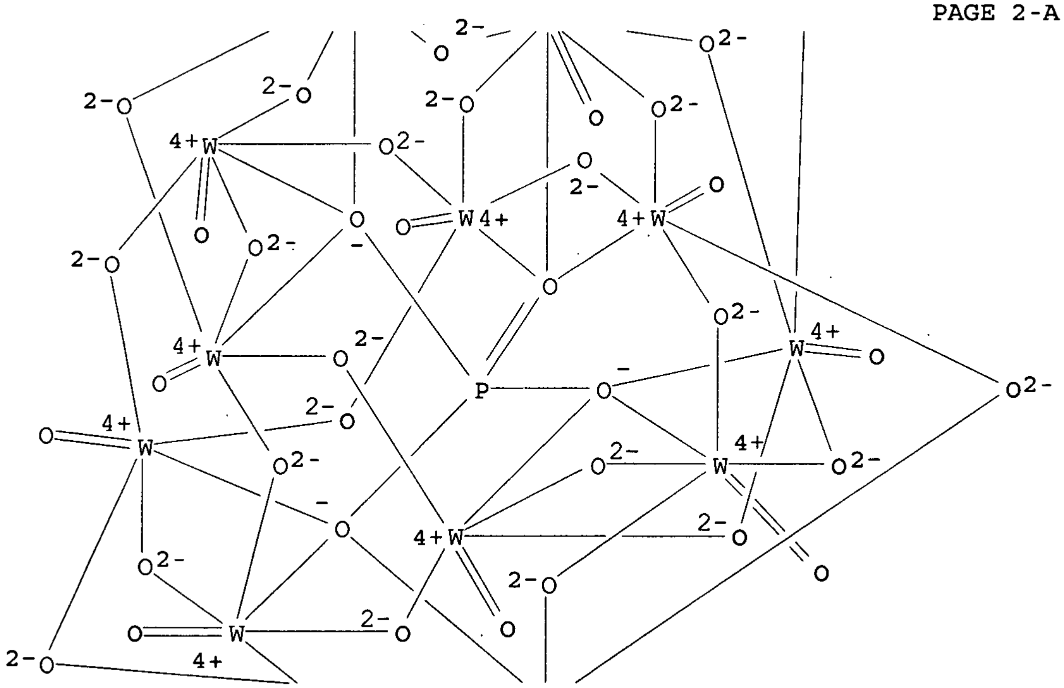

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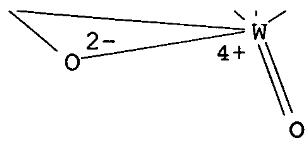
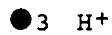
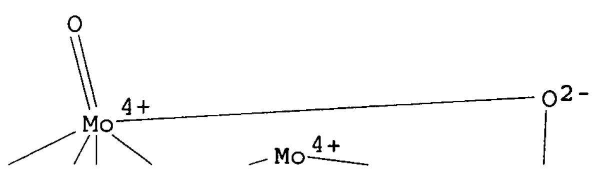




RN 12026-57-2 HCAPLUS

CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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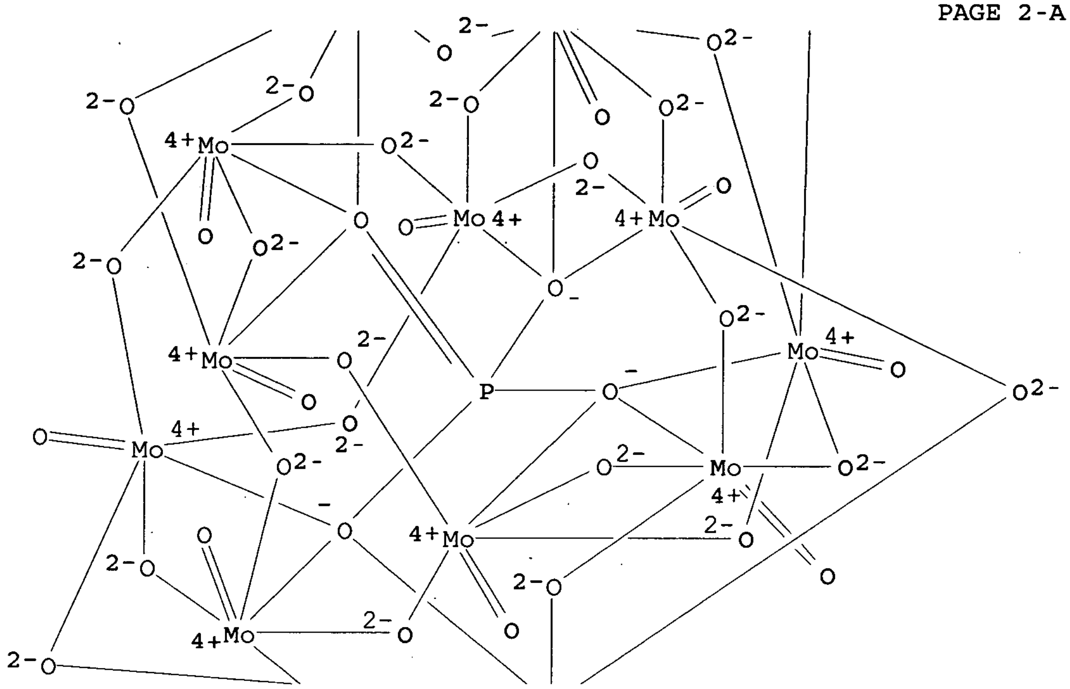

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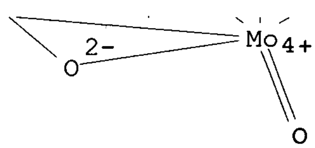
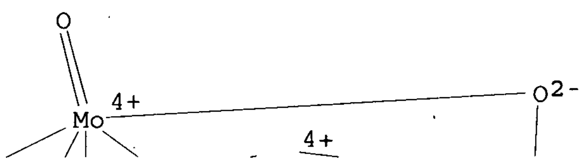


●3 H^+

RN 12027-12-2 HCAPLUS
CN Molybdate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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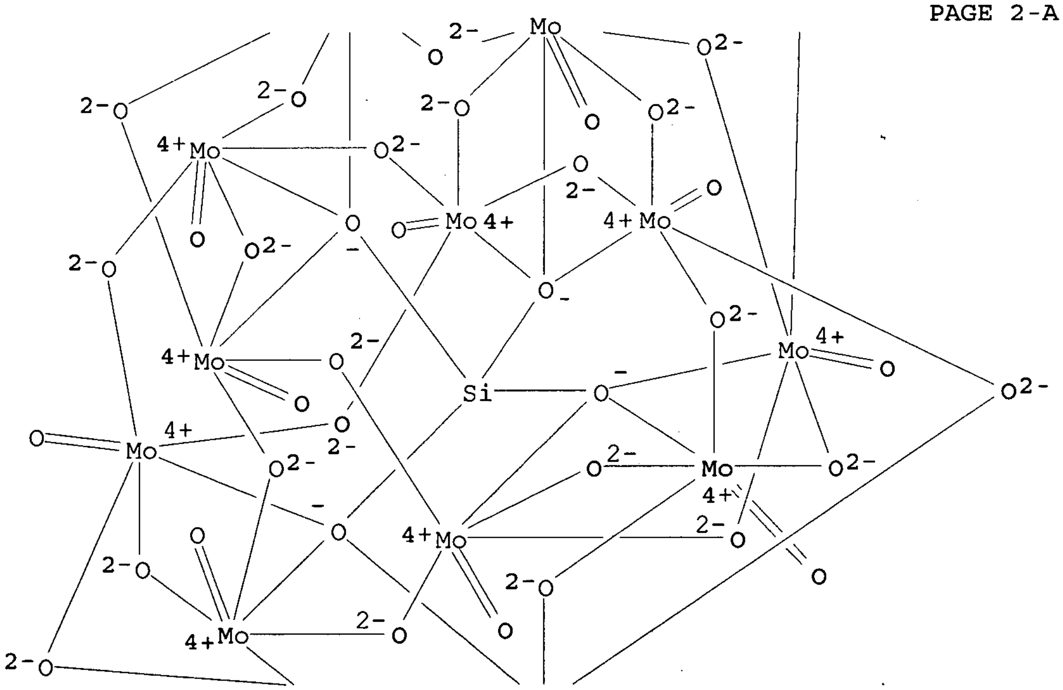

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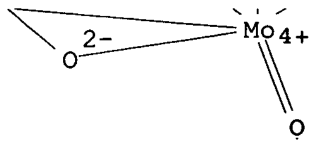
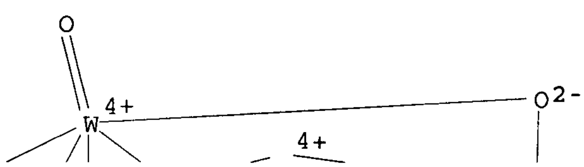


●4 H^+

RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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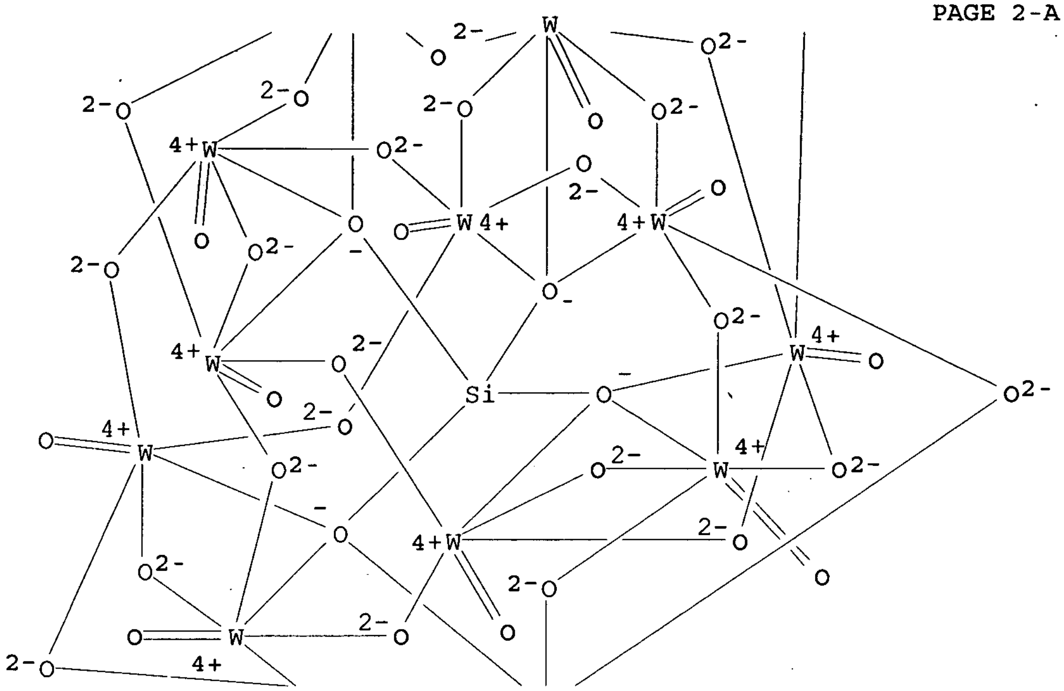

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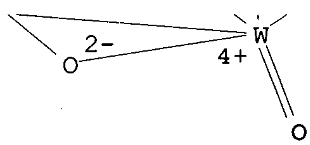


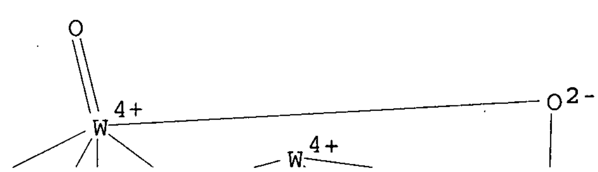
● 4 H^+

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 33 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:919925 HCAPLUS
DN 136:247782
TI L-sorbose acetonation catalyzed by heteropolyacids
AU Nadtochii, M. A.; Burova, L. E.; Vasil'eva, I. B.; Melent'eva, T. A.
CS State Research Institute of Vitamins, State Unitary Enterprise, Moscow, Russia
SO Pharmaceutical Chemistry Journal (Translation of Khimiko-Farmatsevticheskii Zhurnal) (**2001**), 35(5), 282-283
CODEN: PCJOAU; ISSN: 0091-150X
PB Kluwer Academic/Consultants Bureau
DT Journal
LA English
OS CASREACT 136:247782

AB The acetonation of L-sorbose in the presence of heteropolyacid (HPA) catalysts, including tungstophosphoric, molybdophosphoric, and tungstosilicic acids, was studied. The acid catalyzate **composition** was analyzed by GC for content of sorbose and diacetonesorbose, and data showed that HPAs can successfully be used as catalysts for L-sorbose acetonation. Isolation of the HPAs after acetonation was also studied for possible re-use of catalyst.
CC 33-6 (Carbohydrates)
IT **1343-93-7 12026-57-2 12027-38-2** 12207-33-9
12297-12-0
RL: **CAT (Catalyst use)**; USES (Uses)
(acetonation of L-sorbose catalyzed by **heteropolyacids**)
IT **1343-93-7 12026-57-2 12027-38-2**
12297-12-0
RL: **CAT (Catalyst use)**; USES (Uses)
(acetonation of L-sorbose catalyzed by **heteropolyacids**)
RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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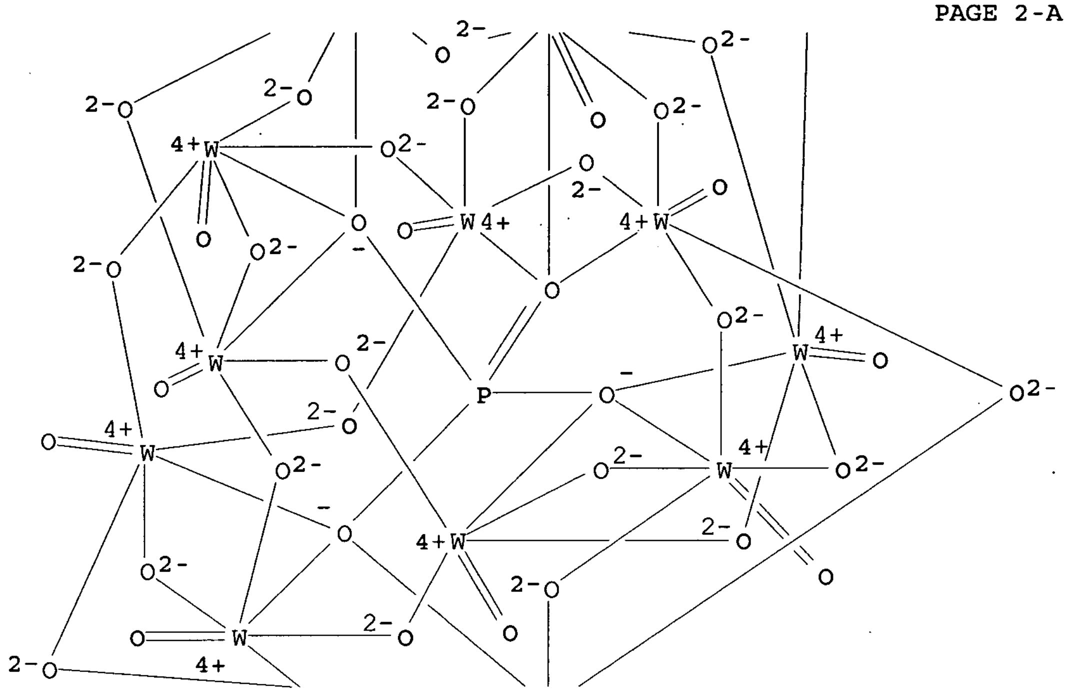

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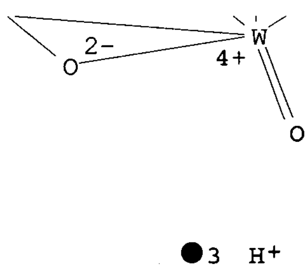
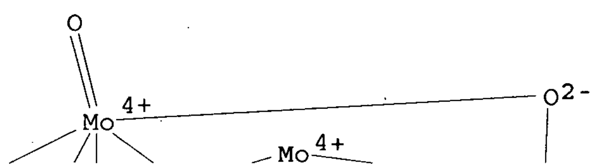


RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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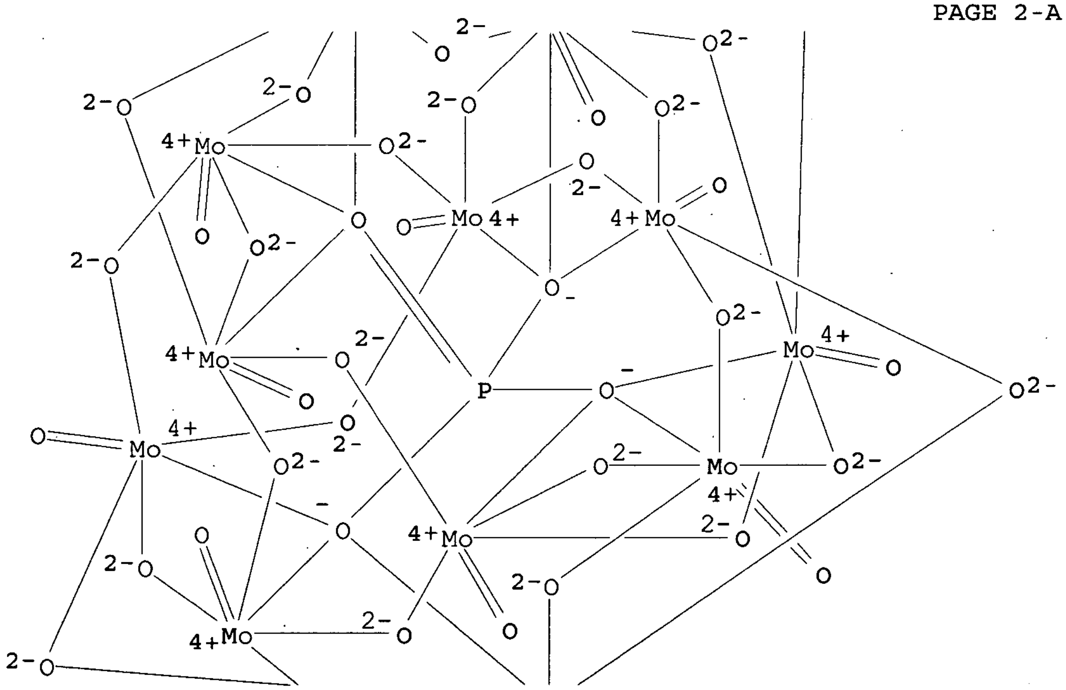

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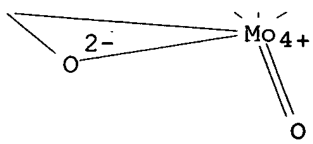
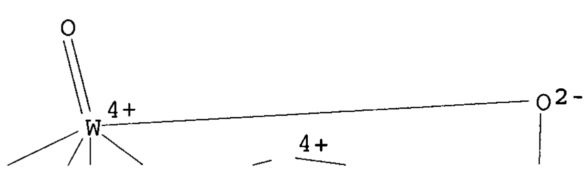


RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp a.O':κO':κO':κO'':κO'':κO'':κO''':.kap pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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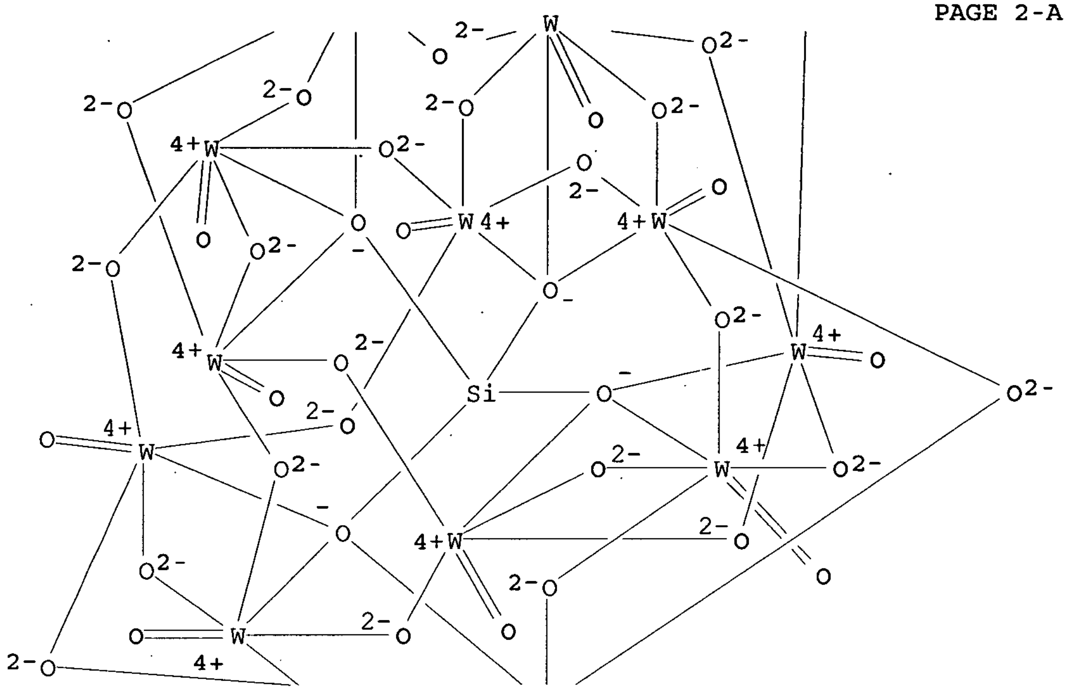

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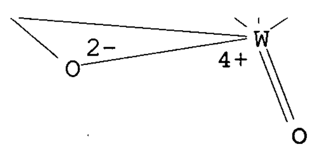
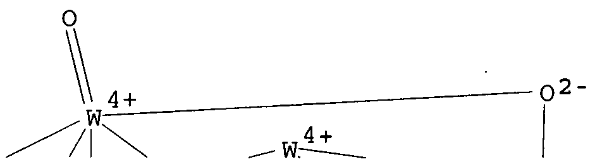


● 4 H^+

RN 12297-12-0 HCAPLUS
CN Tungstate(5-), tetracosa-μ-oxododecaoxo[μ12-[tetrahydroxyborato(5-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, pentahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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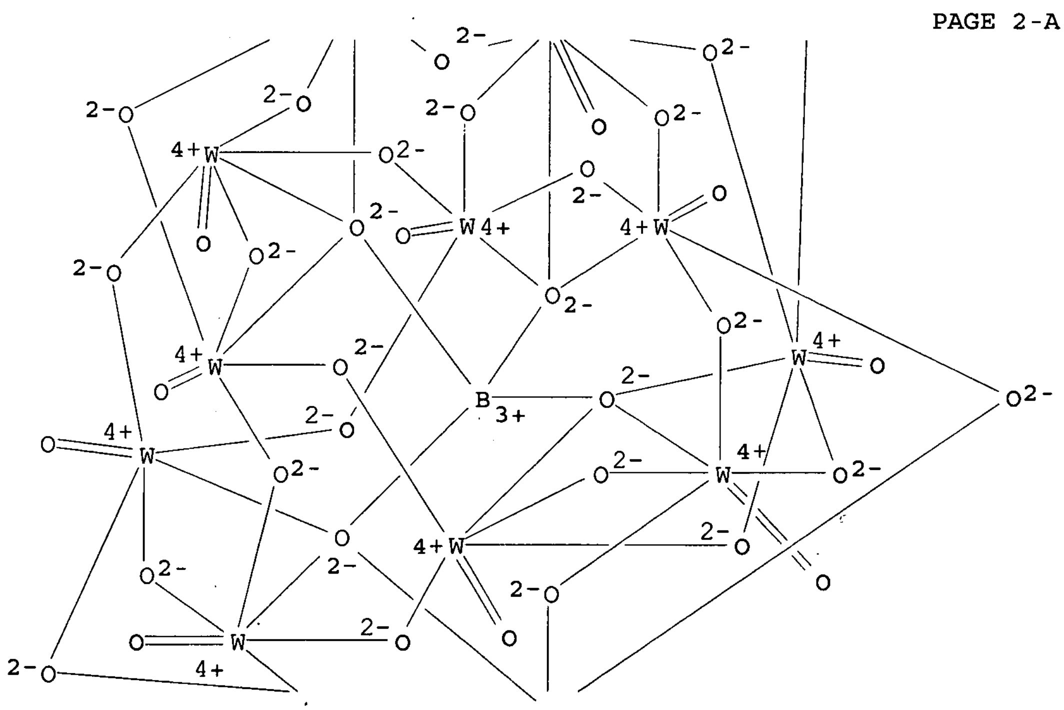
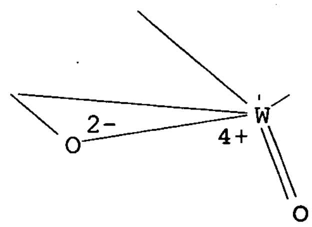




PAGE 3-A

●5 H+

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 34 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:896242 HCAPLUS
DN 136:247923
TI Stability of iron in the Keggin anion of heteropoly acid catalysts for selective oxidation of isobutane
AU Knapp, Carlos; Ui, Toshiaki; Nagai, Koichi; Mizuno, Noritaka
CS Basic Chemicals Research Laboratory, Sumitomo Chemical Co. Ltd., Japan Chemical Industry Association, Ehime, Niihama, 792-8521, Japan
SO Catalysis Today (**2001**), 71(1-2), 111-119
CODEN: CATTEA; ISSN: 0920-5861
PB Elsevier Science B.V.
DT Journal
LA English
AB The thermal stability and isobutane oxidation activity of catalysts with Fe selectively placed in the Keggin anion have been studied. For the Cs3H1PMo11FeO39 salt, Fe was released from the Keggin structure above 570 K, as observed by FT-IR spectroscopy. However, in the presence of NH4+ as counter-cation, Fe was released from the Keggin anion at 470 K, simultaneously catalyzing the elimination of NH4+. Fe-substituted catalysts with Fe contents of 0-1, where ammonium was removed during the heat pre-treatment, showed a neg. influence of Fe on the selectivity to methacrylic acid (MAA) and on the isobutane conversion. The influence of the initial position of Fe, inside or outside the Keggin anion, was studied. A catalyst in which Fe was initially as counter-cation, Cs1.5Fe0.5(NH4)2.0PMo12O40, presented a 21% selectivity to MAA at 633 K after 20 h in operation, against a 15% selectivity of a catalyst that had a similar **composition** but with Fe initially inside the Keggin anion, Cs1.5(NH4)2.0PMo11.5Fe0.5O39.5. Both catalysts showed similar isobutane conversions of ca. 8%. The catalysts underwent changes during the first few hours in a reaction that led to an increase of the selectivity to MAA in both the cases. However, the active sites derived from the lacunary species generated after release of Fe from the Keggin anion were less selective than those derived from 12-molybdophosphoric units.
CC 35-2 (Chemistry of Synthetic High Polymers)
IT **62493-67-8** 404582-81-6, Ammonium iron molybdenum oxide phosphate ((NH4)3.5Fe0.5Mo11.5O35.5(PO4)) 404582-82-7 404582-83-8 404841-89-0 404841-90-3
RL: **CAT (Catalyst use)**; USES (Uses)
(stability of iron in the Keggin anion of **heteropoly** acid catalysts for selective oxidation of isobutane)
IT 554-13-2, Dilithium carbonate **10421-48-4**, Ferric **nitrate** **12026-57-2**, H3PMo12O40

RL: **CAT (Catalyst use)**; RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(stability of iron in the Keggin anion of **heteropoly** acid catalysts for selective oxidation of isobutane)

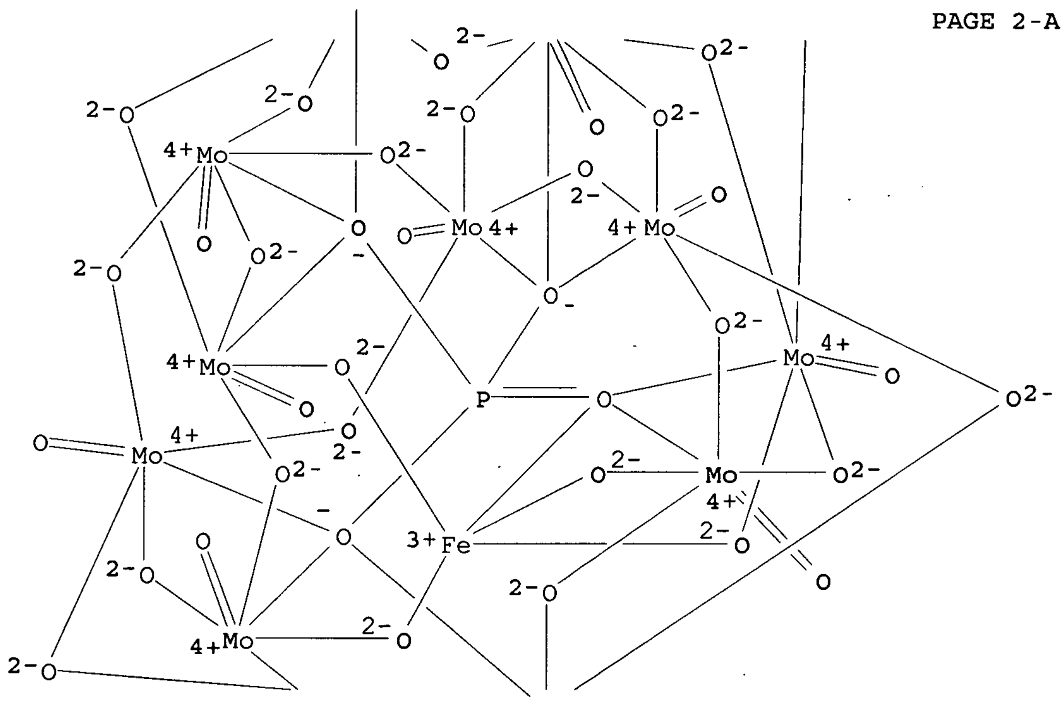
IT **62493-67-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(stability of iron in the Keggin anion of **heteropoly** acid catalysts for selective oxidation of isobutane)

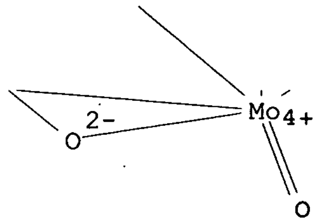
RN 62493-67-8 HCAPLUS

CN Molybdate(4-), ferratetetracosa-μ-oxoundecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]undeca-, tetraammonium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A





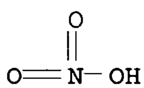
PAGE 3-A

●4 $NH_4{}^+$

IT **10421-48-4**, Ferric **nitrate 12026-57-2**,
H3PMo12O40
RL: **CAT (Catalyst use)**; RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(stability of iron in the Keggin anion of **heteropoly** acid catalysts for selective oxidation of isobutane)

RN 10421-48-4 HCAPLUS

CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)

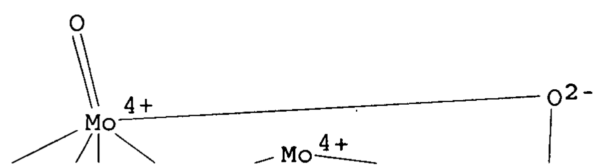


●1/3 Fe(III)

RN 12026-57-2 HCAPLUS

CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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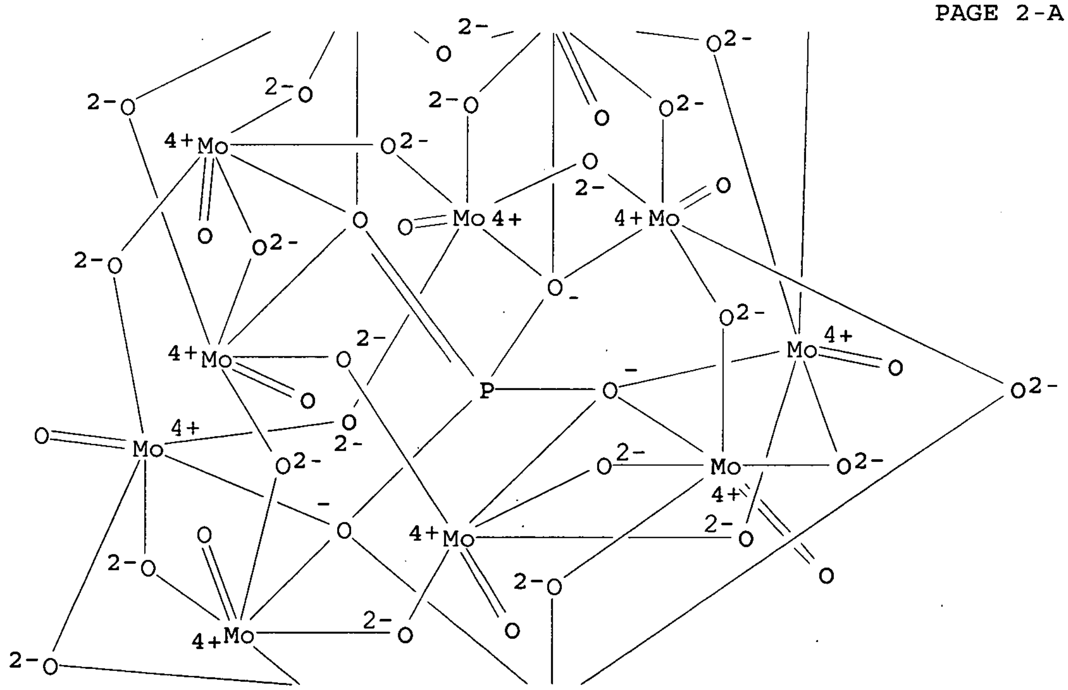

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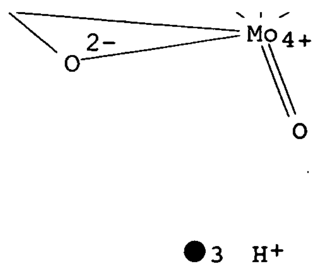


RE.CNT 60 THERE ARE 60 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

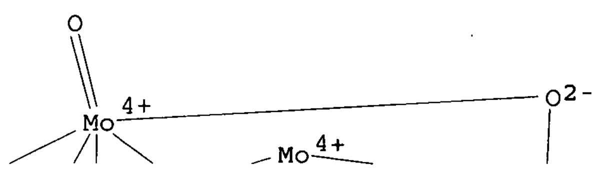
L32 ANSWER 35 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:651061 HCAPLUS
DN 136:88089
TI Oxidation reactivities of dibenzothiophenes in polyoxometalate/H2O2 and formic acid/H2O2 systems
AU Te, M.; Fairbridge, C.; Ring, Z.
CS National Centre for Upgrading Technology, Devon, AB, T9G 1A8, Can.
SO Applied Catalysis, A: General (**2001**), 219(1-2), 267-280
CODEN: ACAGE4; ISSN: 0926-860X
PB Elsevier Science B.V.
DT Journal
LA English
AB Dibenzothiophene, 4-methyldibenzothiophene, and 4,6-dimethyldibenzothiophene are typical thiophenic sulfur compds. that exist in diesel fuels. Using toluene solns. of the model compds., expts. were carried out to compare the reactivity of the different dibenzothiophenes in oxidation reactions, a key step for oxidative desulfurization. A series of polyoxometalate/H2O2 systems were evaluated for dibenzothiophene oxidation The H2O2 solns. of phosphotungstic acid and its salt were very active catalyst systems for the model compound oxidation, while their molybdenum counterpart systems were much less active. The H2O2 solns. of silicotungstic and silicomolybdic compds. were the least active catalyst systems for the reaction. Oxidation reactivities decreased in the order of dibenzothiophene>4-methyldibenzothiophene>4,6-dimethyldibenzothiophene, the same reactivity trend that exists in HDS. However, the oxidation of the dibenzothiophenes was achieved under mild reaction conditions and it was easy to increase reaction temperature or reaction time to achieve high oxidation conversions, even for the least reactive 4,6-dimethyldibenzothiophene. Apparent activation energies of dibenzothiophene, 4-methyldibenzothiophene, and 4,6-dimethyldibenzothiophene oxidation were 53.8, 56.0, and 58.7 kJ/mol, resp. These activation energies indicated a decrease in reactivity of dibenzothiophenes as Me substitutes increased at the 4 and 6 positions on dibenzothiophene rings. Interestingly, in a formic acid/H2O2 system, the oxidation reactivity of the dibenzothiophenes showed the reverse trend, suggesting that steric hindrance might play a role when bulky polyoxoperoxo species, which likely form in a hydrogen peroxide solution, act as catalysts.
CC 51-12 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): **59**
IT **1313-30-0 1343-93-7 12026-57-2**
12026-98-1 12027-12-2 12027-38-2
RL: **CAT (Catalyst use)**; USES (Uses)
(oxidation reactivities of dibenzothiophenes in **polyoxometalate**
/H2O2 and formic acid/H2O2 systems)

IT **1313-30-0 1343-93-7 12026-57-2**
12026-98-1 12027-12-2 12027-38-2
RL: **CAT (Catalyst use)**; USES (Uses)
(oxidation reactivities of dibenzothiophenes in **polyoxometalate** /H2O2 and formic acid/H2O2 systems)

RN 1313-30-0 HCAPLUS

CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trisodium (9CI) (CA INDEX NAME)

PAGE 1-A



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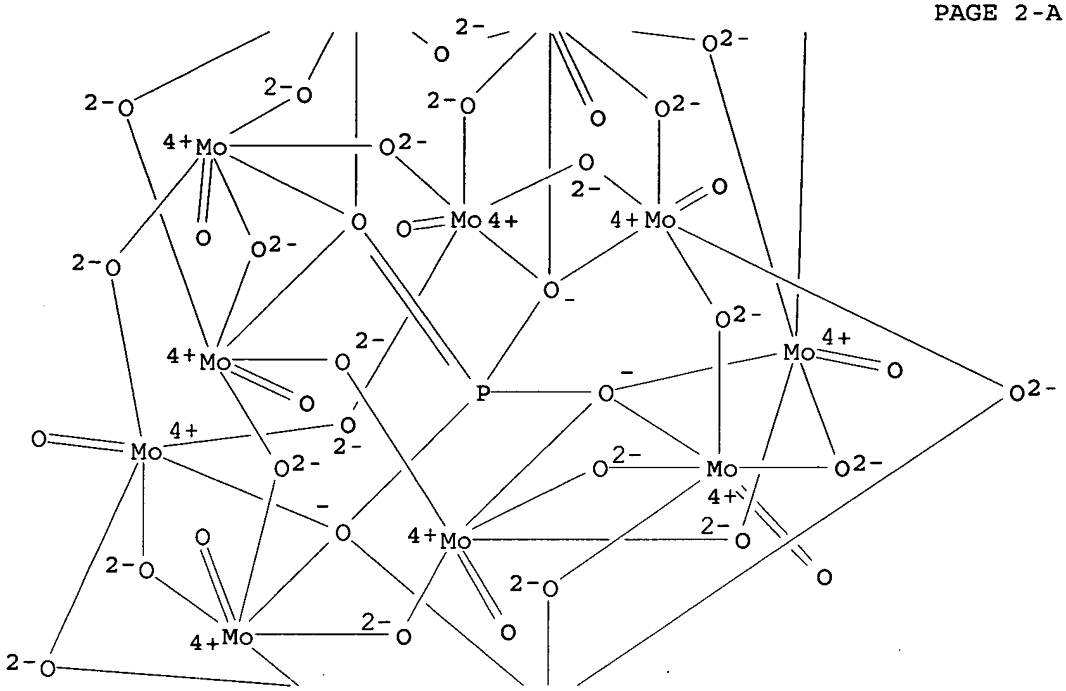

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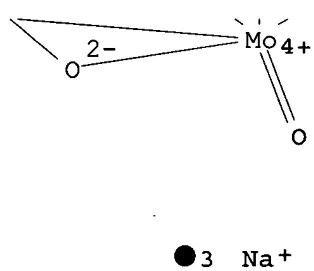
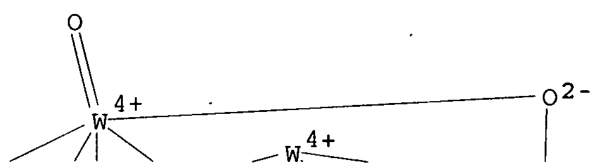


RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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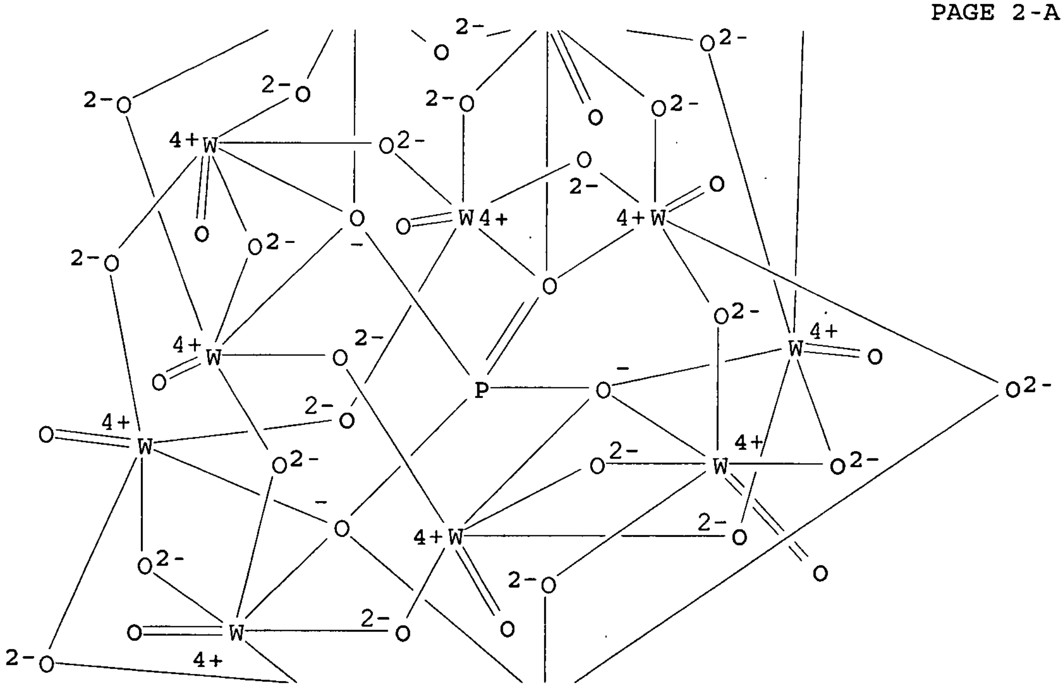

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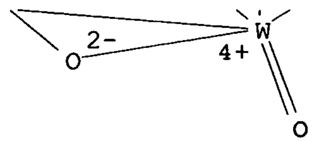
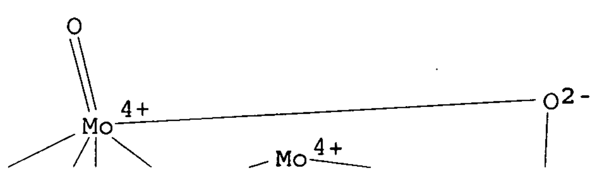


● 3 H^+

RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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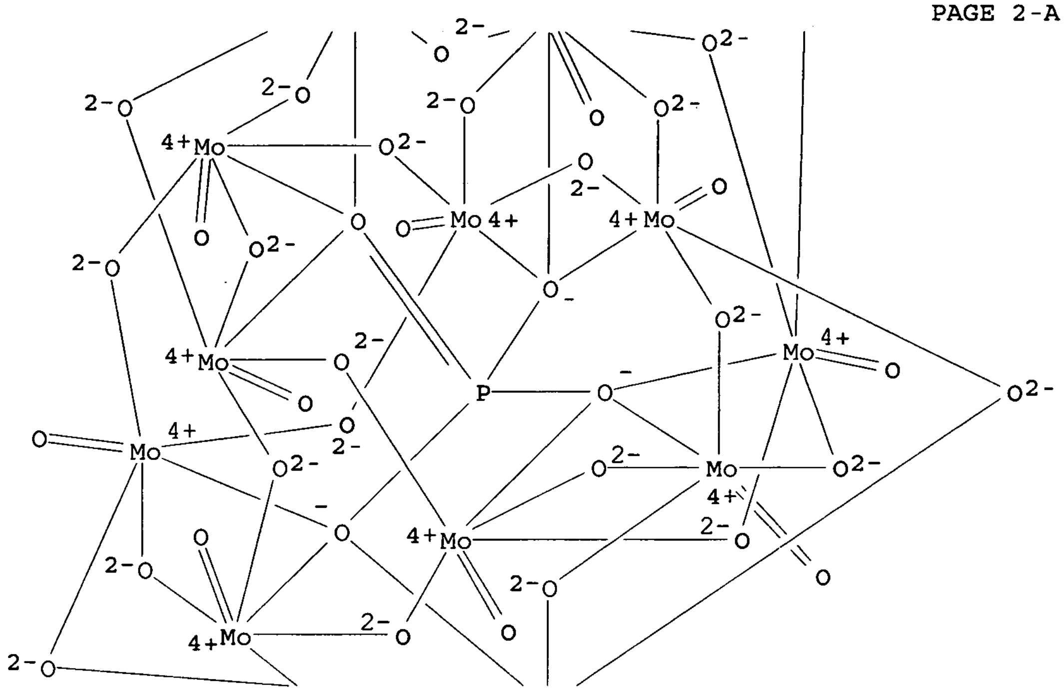

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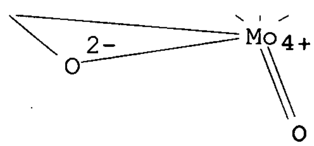
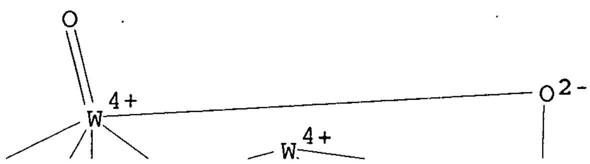


●3 H^+

RN 12026-98-1 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trisodium (9CI) (CA INDEX NAME)

PAGE 1-A



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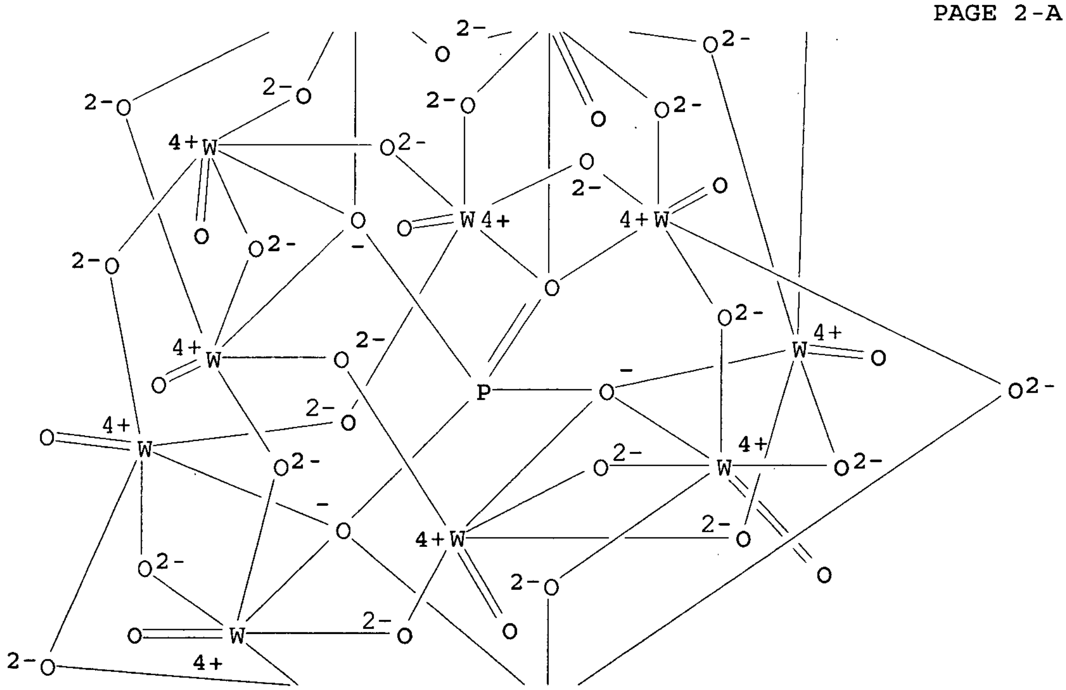

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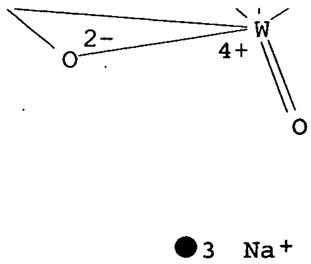
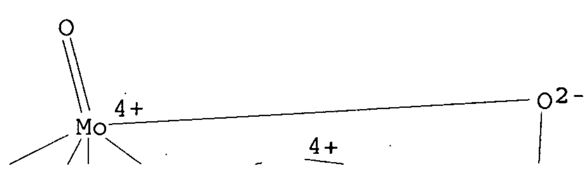


RN 12027-12-2 HCAPLUS
CN Molybdate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kappa.O':κO':κO':κO'':κO'':κO'':κO''':.kappa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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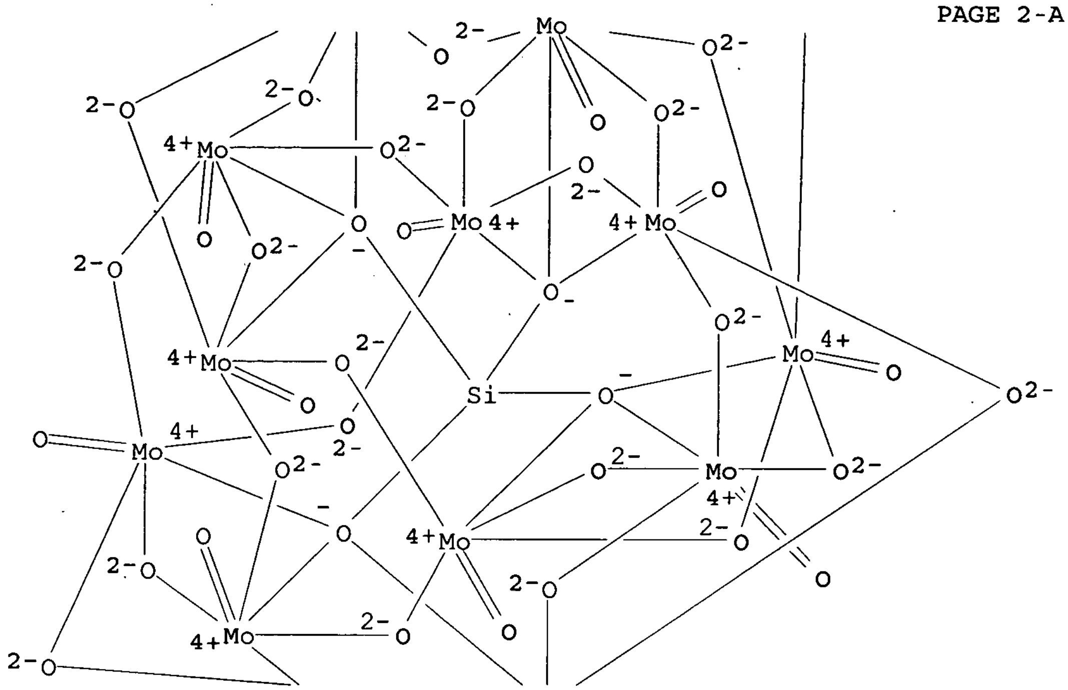

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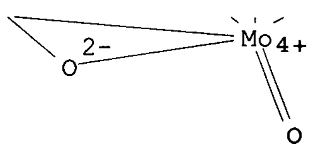
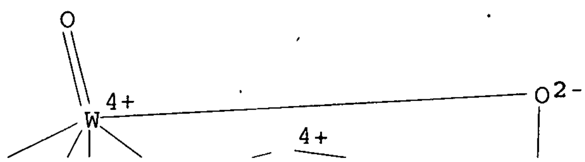


● 4 H^+

RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp a.O':κO':κO':κO'':κO'':κO'':κO''':.kap pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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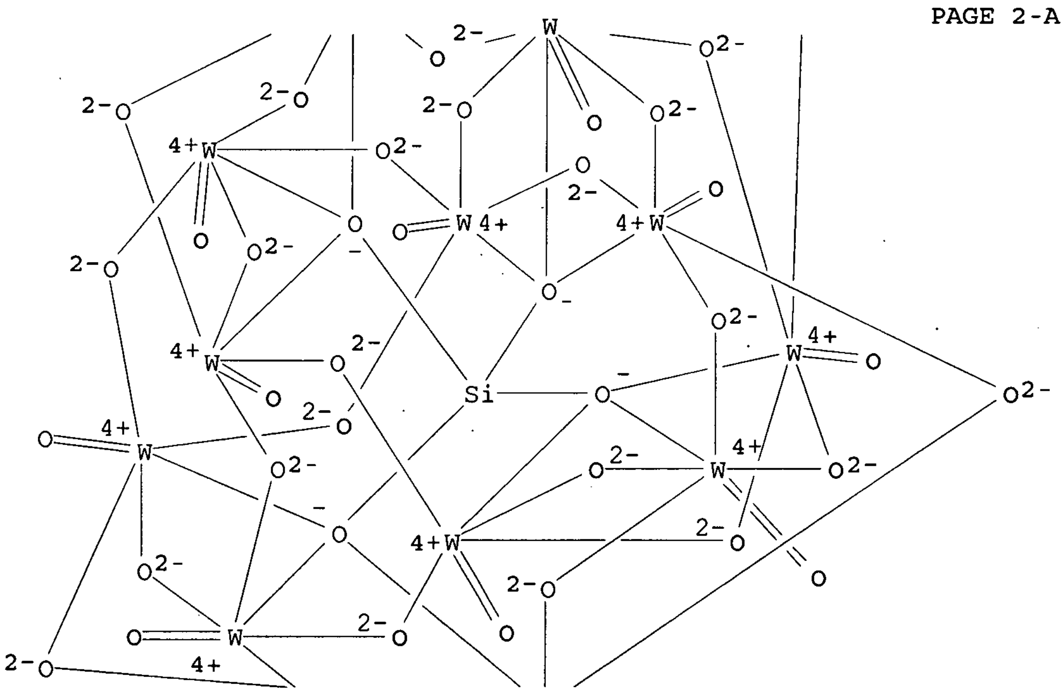

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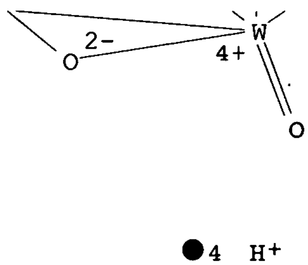


RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

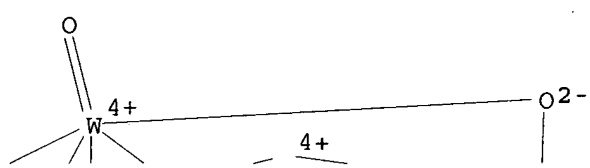
L32 ANSWER 36 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:610535 HCAPLUS
DN 135:332707
TI Direct catalytic oxidation of ethylene to acetic acid. II. Choosing the catalyst manufacture conditions
AU Yao, Jun-pin; Xu, Pei-ruo; Xu, Zheng-yong; Zhu, Zhi-hua
CS Chemical Engineering College, ECUST, Shanghai, 200237, Peop. Rep. China
SO Huadong Ligong Daxue Xuebao (**2001**), 27(3), 230-233, 237
CODEN: HLIXEV; ISSN: 1006-3080
PB Huadong Ligong Daxue Xuebao Bianjibu
DT Journal
LA Chinese
AB In the research of direct oxidation of ethylene to acetic acid, the effect of manufacture conditions on the performance of Pd-HSiW-Cr-Te/SiO3 has been studied, and the catalyst was investigated by XRD (x-ray diffraction), XPS, TEM techniques. SiO2 calcining temperature, Na2PdCl4 maceration time and catalyst activating procedure were the prominent factors affecting the performance of the catalyst. SiO2 calcined at 600° compared with 800°, the former was preferred, which could provide suitable pore diameter and pore distribution. If Na2PbCl4 maceration time was not enough, the catalyst activity was bad, however, too long time was unfavorable for the selectivity of acetic acid. The appropriate maceration time was 30 h. The catalyst must be activated with mixture gas of C2H4,O2 and N2. The **composition** of the activating gas was C2H4:O2:N2 = 71:9:20 (mol ratio), and the activating temperature was 220°. During the activating procedure the speed of temperature increase should be moderate. Too quick temperature increase would lead to active component to be agglutinated seriously. By choosing these conditions, the performance of the catalyst was improved. When the reaction conditions were as follows: T = 190°, p = 0.80 MPa, SV (space velocity) = 4 000 h-1, and the **composition** of reaction mixture gas was C2H4:O2:N2:H2O = 50:6:14:30 (mol ratio), the conversion of C2H4 and the selectivity of acetic acid could reach 4.0% and 86.1% resp., and the byproducts CO2 and CH3CHO decreased to 11.7% and 1.0%. The once-through space time yield of acetic acid could reach 185.0 g/(L-h).
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67
IT 7440-05-3, Palladium, uses 7440-47-3, Chromium, uses 7631-86-9, Silica, uses **12027-38-2**, 12-Tungstosilicic acid 13494-80-9, Tellurium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(direct catalytic oxidation of ethylene to acetic acid with palladium **heteropoly** acid catalyst)
IT **12027-38-2**, 12-Tungstosilicic acid
RL: **CAT (Catalyst use)**; USES (Uses)

(direct catalytic oxidation of ethylene to acetic acid with palladium **heteropoly** acid catalyst)

RN 12027-38-2 HCAPLUS

CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp a.O':κO':κO':κO'':κO'':κO'':κO''':.kap pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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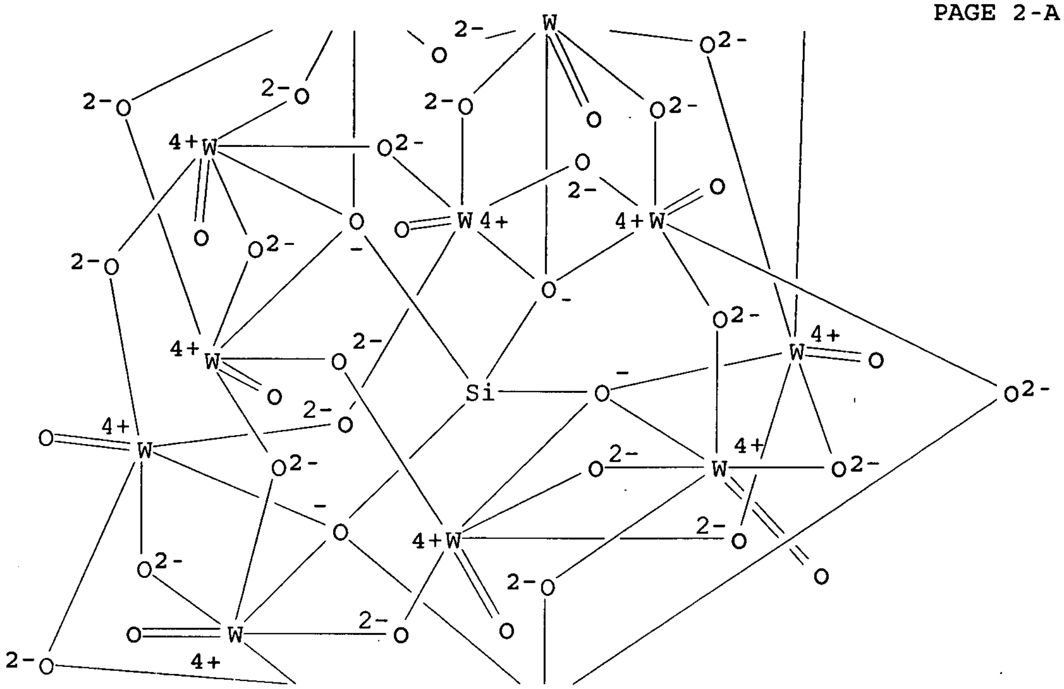

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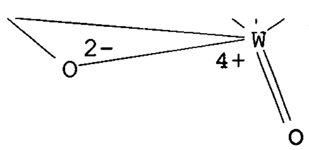


●4 H^+

L32 ANSWER 37 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:549495 HCAPLUS
DN 135:303525
TI A 31P-NMR study of peroxo species formed during oxidation of cyclohexene with hydrogen peroxide in tri-n-butyl phosphate catalyzed by heteropolyacids
AU Hashimoto, Masato; Itoh, Koshi; Lee, Kwan Young; Misono, Makoto
CS Department of Applied Chemistry, Graduate School of Engineering, The University of Tokyo, Tokyo, 113-8656, Japan
SO Topics in Catalysis (**2001**), 15(2-4), 265-271
CODEN: TOCAFI; ISSN: 1022-5528
PB Kluwer Academic/Plenum Publishers
DT Journal
LA English
AB In the oxidation of cyclohexene with H2O2 in monophasic tri-n-butylphosphate (TBP) solution catalyzed by Keggin-type 12-heteropolyacids, i.e.,

H3PMo12-xWxO40 (x = 0-12), several peroxo species were observed by 31P-NMR spectroscopy in lower field than the original heteropolyacids. Their **composition** varied regularly with that of the starting catalyst. The P-containing peroxo species formed was deduced as [PM4O8(O2)8]3- (M = Mo, W). The peroxo species formed more easily with a decrease in the W content, x of H3PMo12-xWxO40. It was further indicated from the reactivity with cyclohexene and the comparison with catalytic performance that W-rich peroxo species were catalytically more active than Mo-rich peroxo species for the oxidation of cyclohexene in this reaction system.

CC 22-7 (Physical Organic Chemistry)

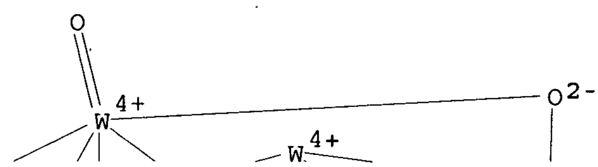
IT **1343-93-7**, 12-Tungstophosphoric acid **12026-57-2**, 12-Molybdophosphoric acid **12411-60-8**, Molybdotungstophosphoric acid (H3Mo6PW6O40) **55467-62-4** **63950-64-1**, Molybdotungstophosphoric acid (H3MoPW11O40) **69106-78-1**, Molybdotungstophosphoric acid (H3Mo2PW10O40) **92627-46-8**, Molybdotungstophosphoric acid (H3Mo7PW5O40) **92627-47-9**, Molybdotungstophosphoric acid (H3Mo8PW4O40) **92627-49-1**, Molybdotungstophosphoric acid (H3Mo9PW3O40) **92627-50-4**, Molybdotungstophosphoric acid (H3Mo10PW2O40) **92627-51-5**, Molybdotungstophosphoric acid (H3Mo11PWO40) **93069-33-1**, Molybdotungstophosphoric acid (H3Mo4PW8O40) **114760-21-3**
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(a 31P-NMR study of peroxo species formed during oxidation of cyclohexene with hydrogen peroxide in tri-Bu phosphate catalyzed by **heteropolyacids**)

IT **1343-93-7**, 12-Tungstophosphoric acid **12026-57-2**, 12-Molybdophosphoric acid **12411-60-8**, Molybdotungstophosphoric acid (H3Mo6PW6O40) **55467-62-4** **63950-64-1**, Molybdotungstophosphoric acid (H3MoPW11O40) **69106-78-1**, Molybdotungstophosphoric acid (H3Mo2PW10O40) **92627-46-8**, Molybdotungstophosphoric acid (H3Mo7PW5O40) **92627-47-9**, Molybdotungstophosphoric acid (H3Mo8PW4O40) **92627-49-1**, Molybdotungstophosphoric acid (H3Mo9PW3O40) **92627-50-4**, Molybdotungstophosphoric acid (H3Mo10PW2O40) **92627-51-5**, Molybdotungstophosphoric acid (H3Mo11PWO40) **93069-33-1**, Molybdotungstophosphoric acid (H3Mo4PW8O40) **114760-21-3**
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(a 31P-NMR study of peroxo species formed during oxidation of cyclohexene with hydrogen peroxide in tri-Bu phosphate catalyzed by **heteropolyacids**)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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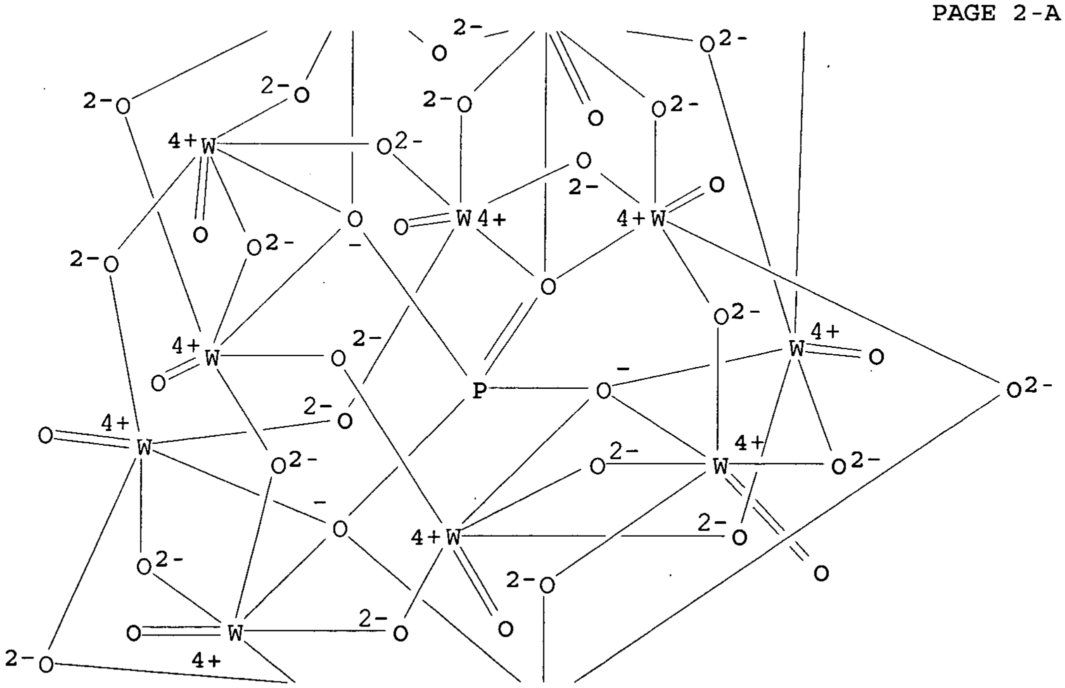

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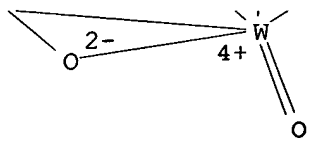
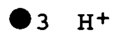
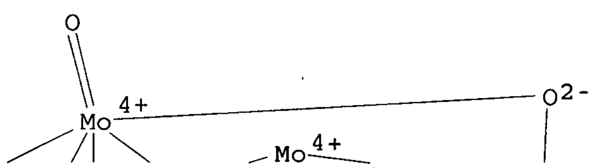




RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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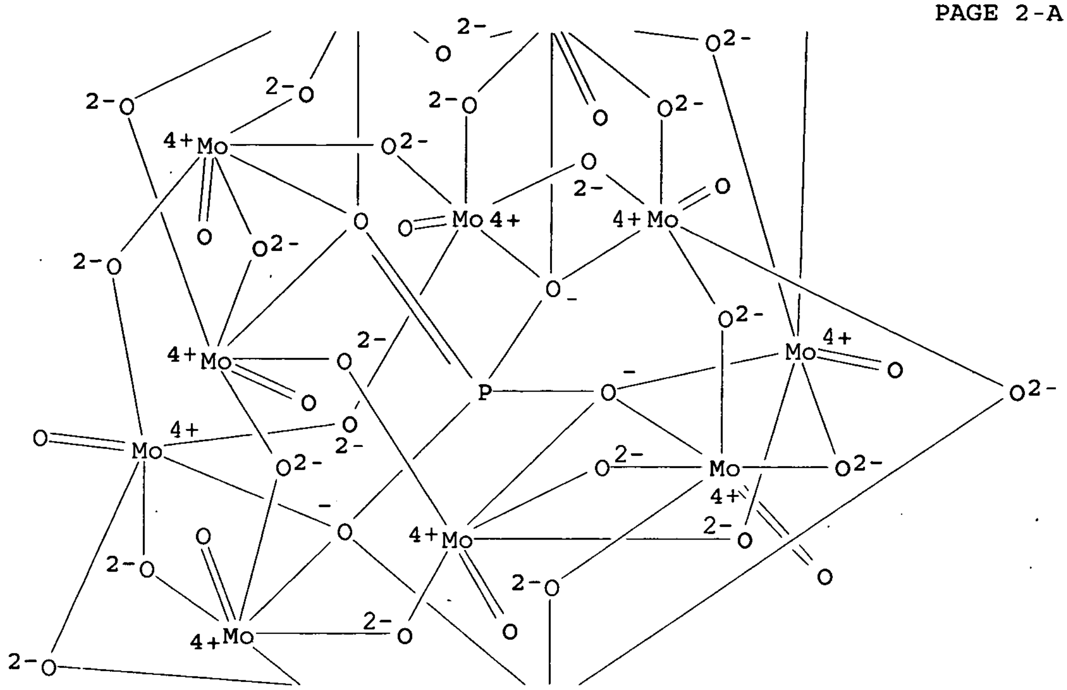

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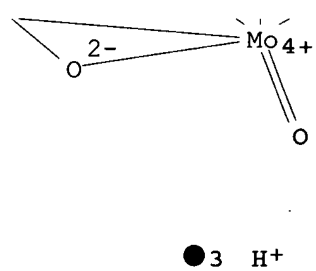
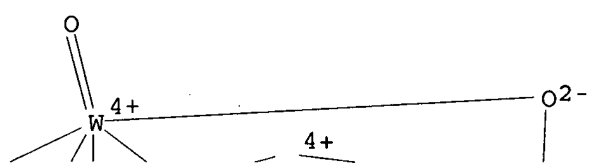


RN 12411-60-8 HCAPLUS
CN Tungstate(3-), (octa-μ-oxohexaoxohexamolybdate)hexadeca-μ-oxohexaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]hexa-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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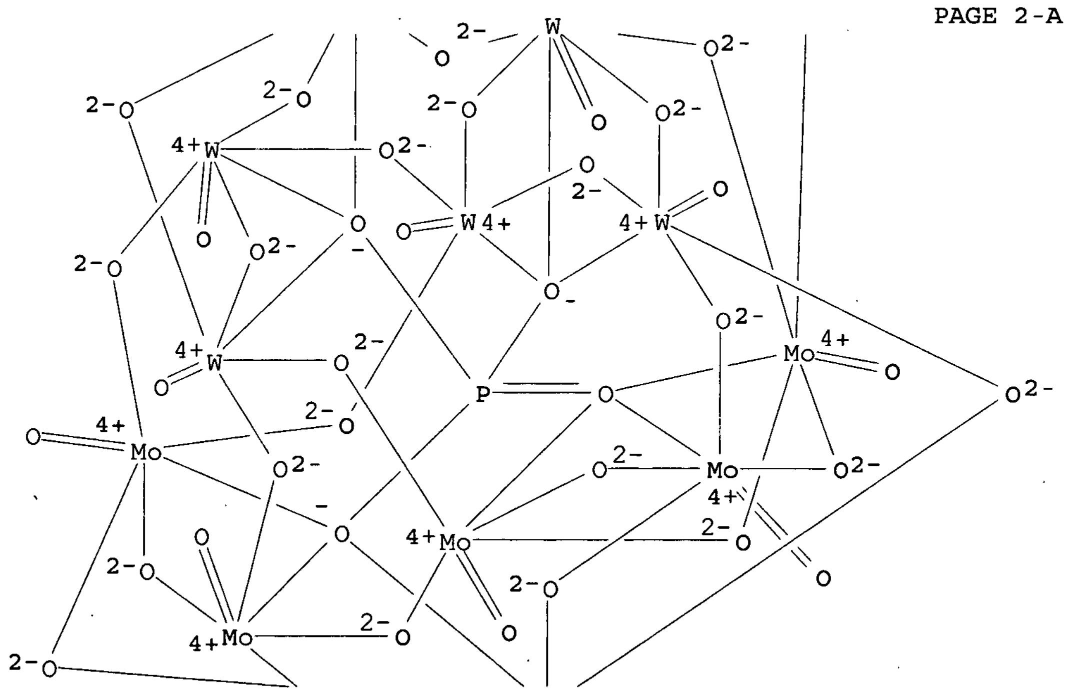

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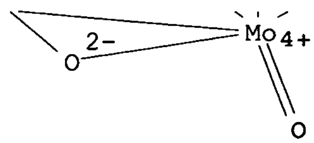


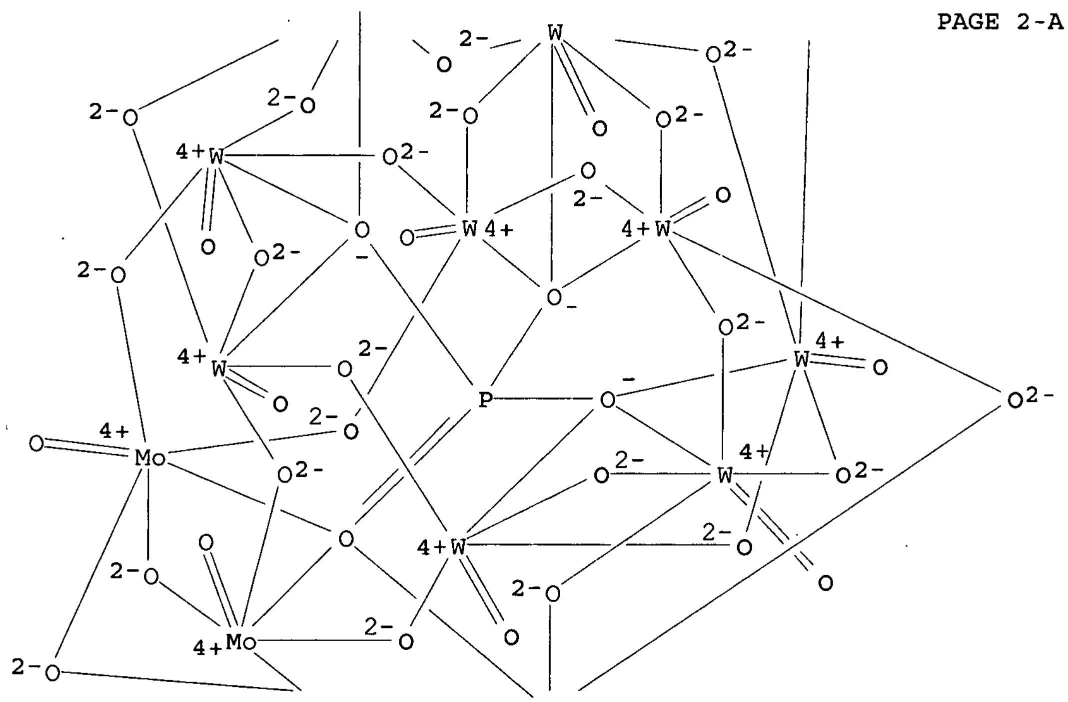
●3 H^+

RN 55467-62-4 HCAPLUS

CN Tungstate(3-), heneicosa-μ-oxononaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']](tri-μ-
oxotrioxotrimolybdate)nona-, trihydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



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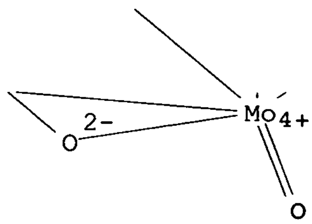
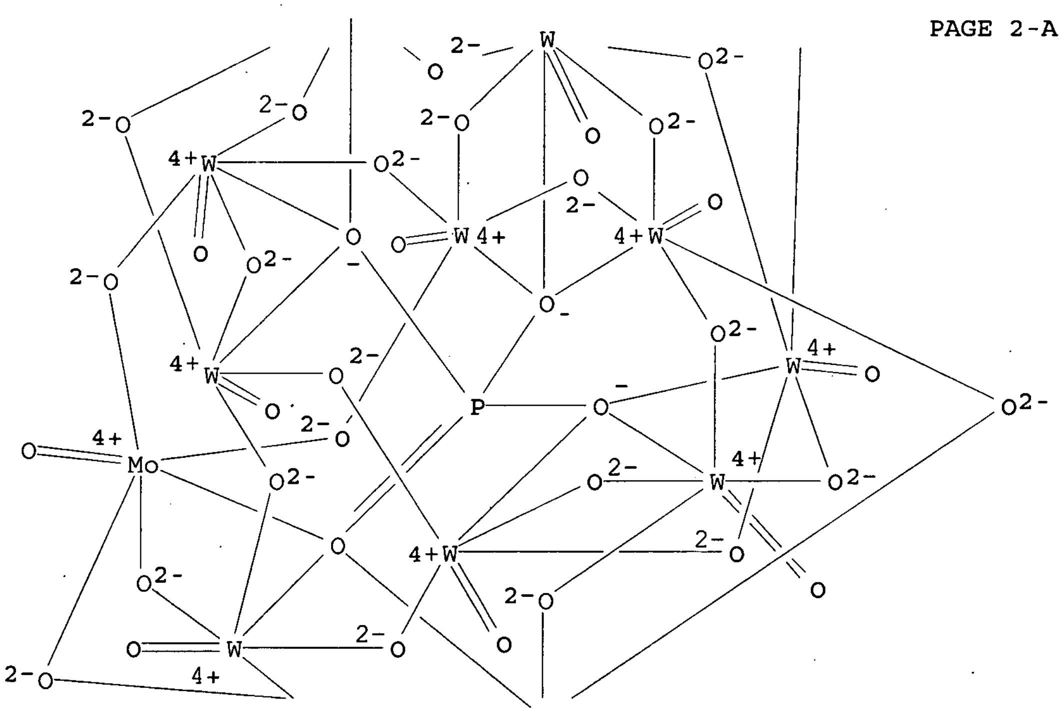


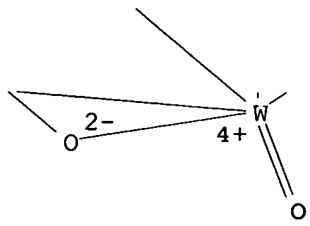
● 3 H^+

RN 63950-64-1 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxoundecaoxo(oxomolybdate)[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':.kappa.O'':κO'':κO'':κO''':κO''':κO''']]undeca-, trihydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A





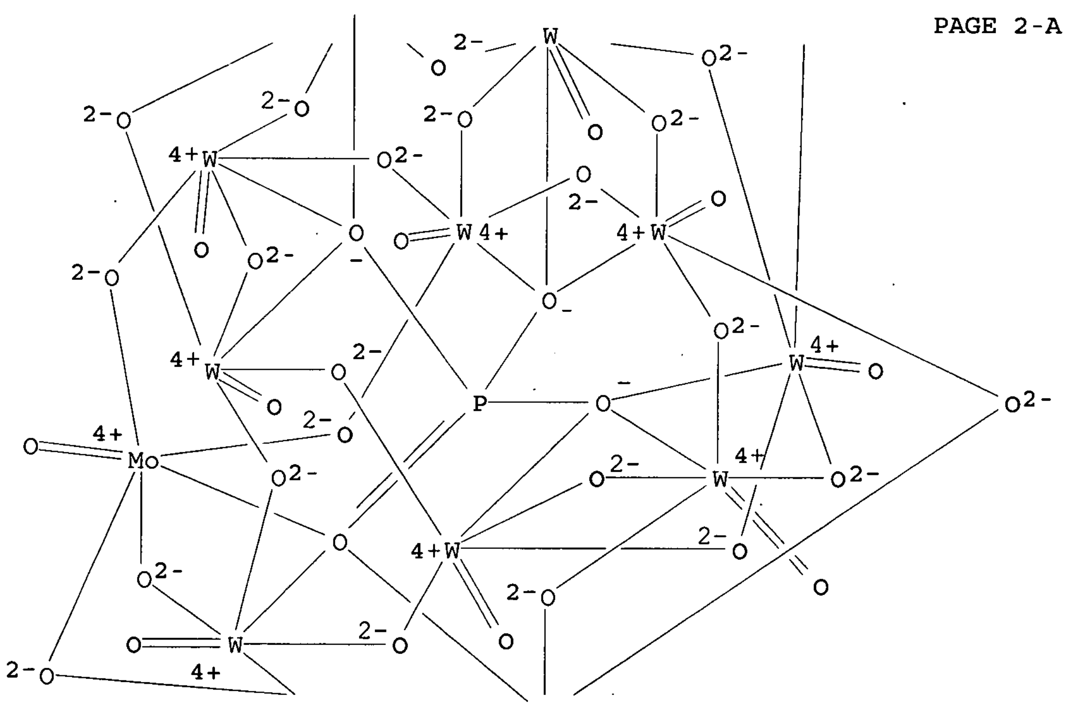
PAGE 3-A

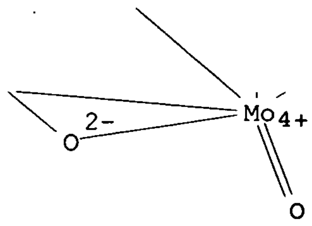
●3 H^+

RN 69106-78-1 HCAPLUS
CN Tungstate(3-), tricosa-μ-oxodecaoxo(μ-oxodioxodimolybdate)[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':.kappa.O'':κO'':κO'':κO''':κO''':κO''']]deca-, trihydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A





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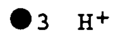
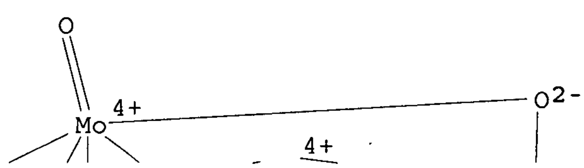


RN 92627-46-8 HCAPLUS
CN Tungstate(3-), (deca-μ-oxoheptaoxoheptamolybdate)tetradeca-μ-oxopentaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':κO''']]penta-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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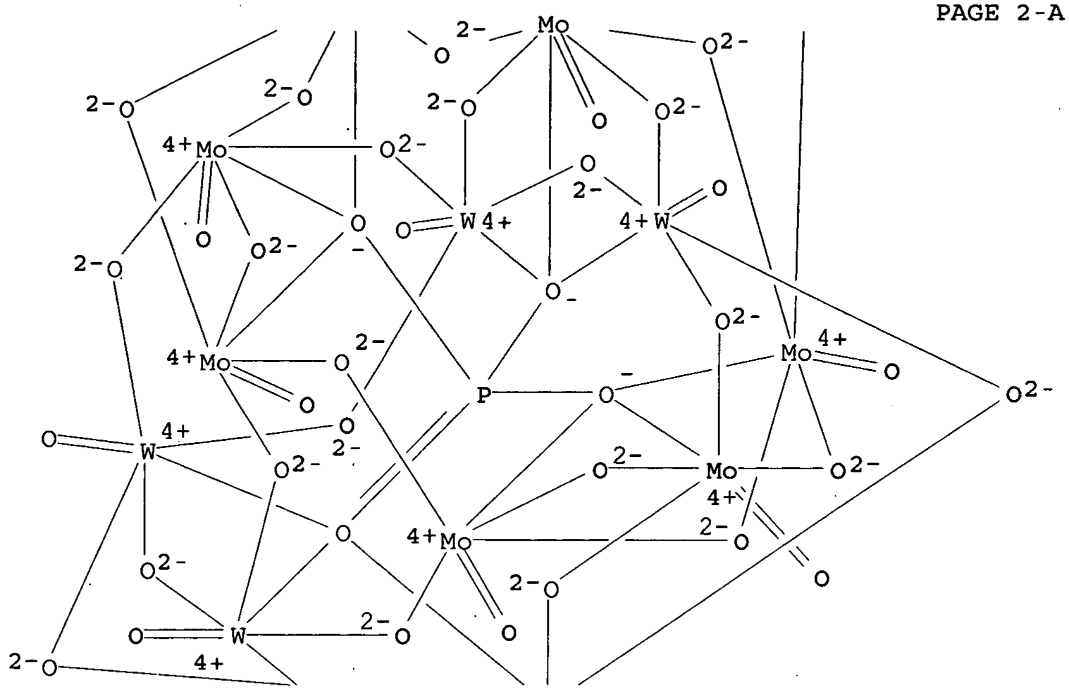

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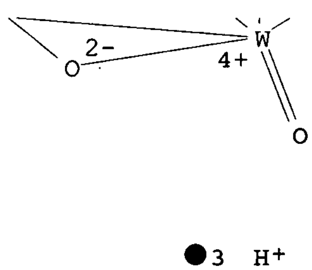
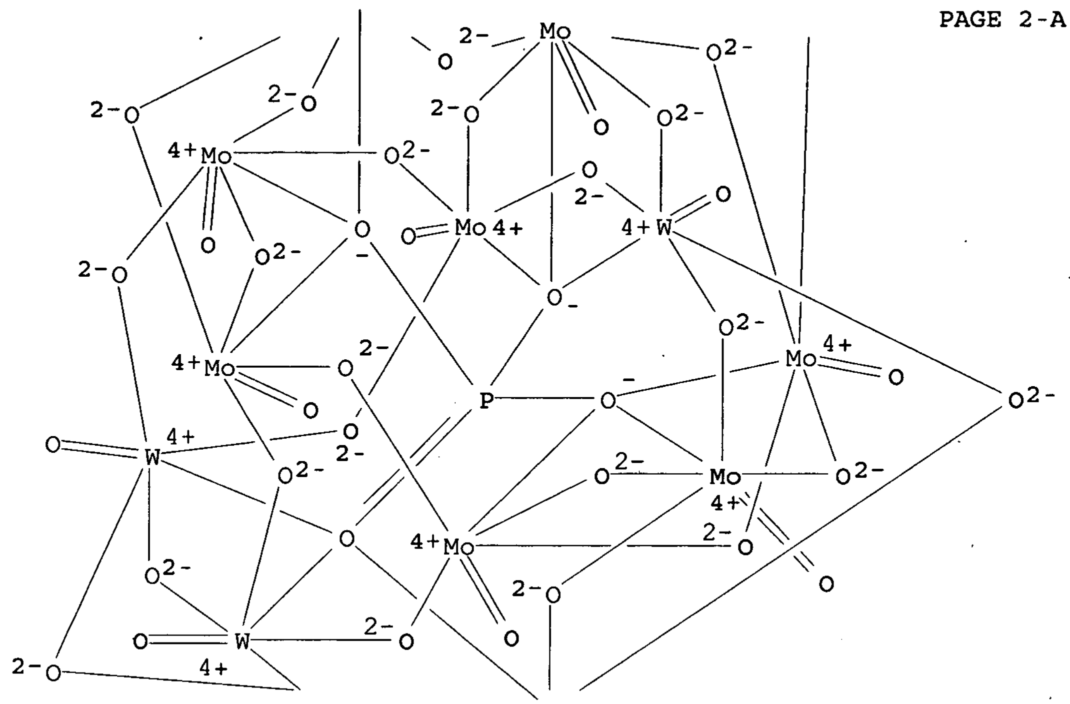
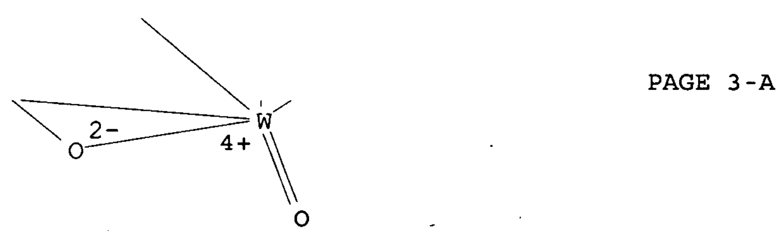
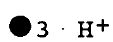


RN 92627-47-9 HCAPLUS
CN Tungstate(3-), (dodeca-μ-oxooctaoxooctamolybdate)dodeca-μ-oxotetraoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':κO''']]tetra-, trihydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *





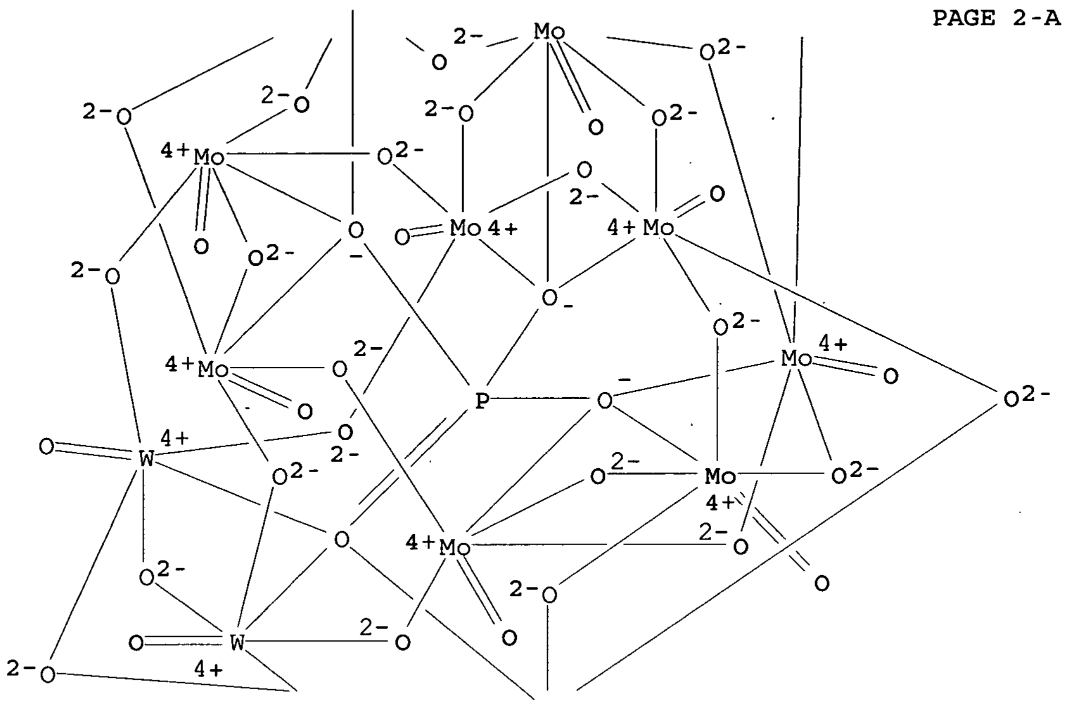


RN 92627-49-1 HCAPLUS

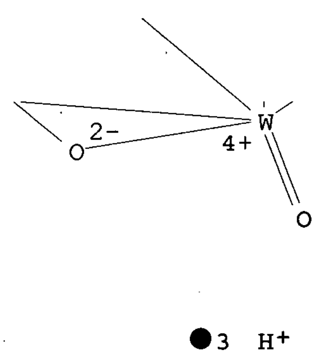
CN Tungstate(3-), nona-μ-oxotrioxo(pentadeca-μ-oxononaoxononamolybdate)[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tri-, trihydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



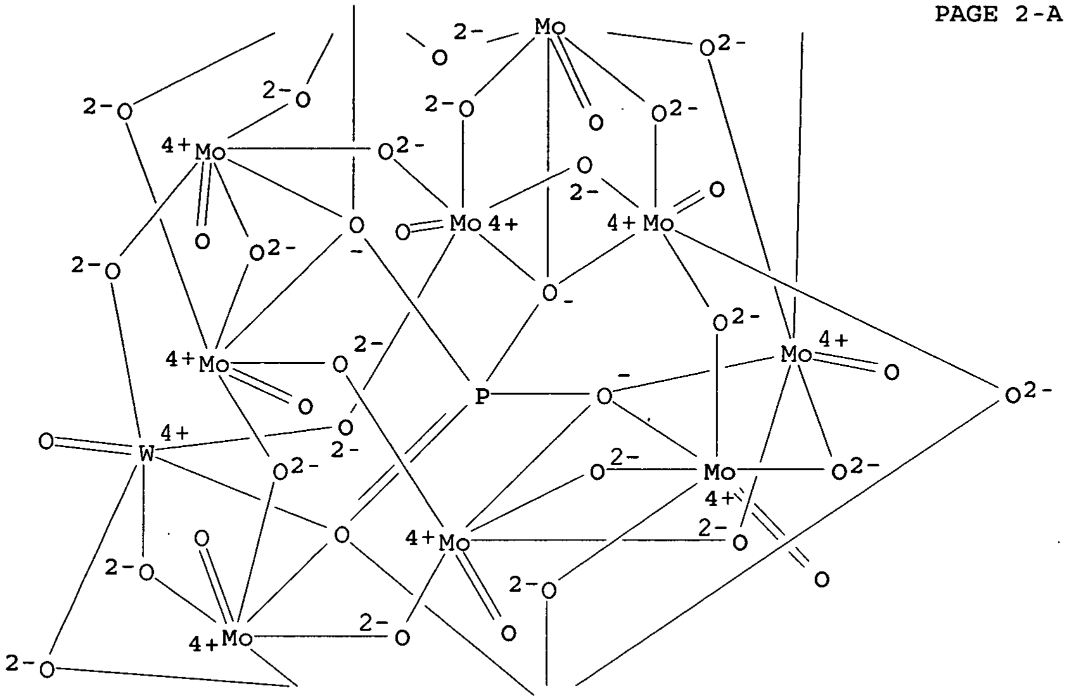
PAGE 3-A



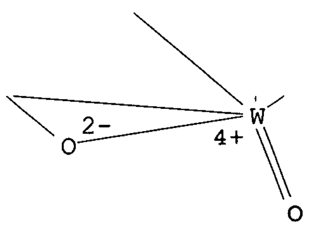
RN 92627-50-4 HCAPLUS
CN Tungstate(3-), (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]di-, trihydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



PAGE 3-A



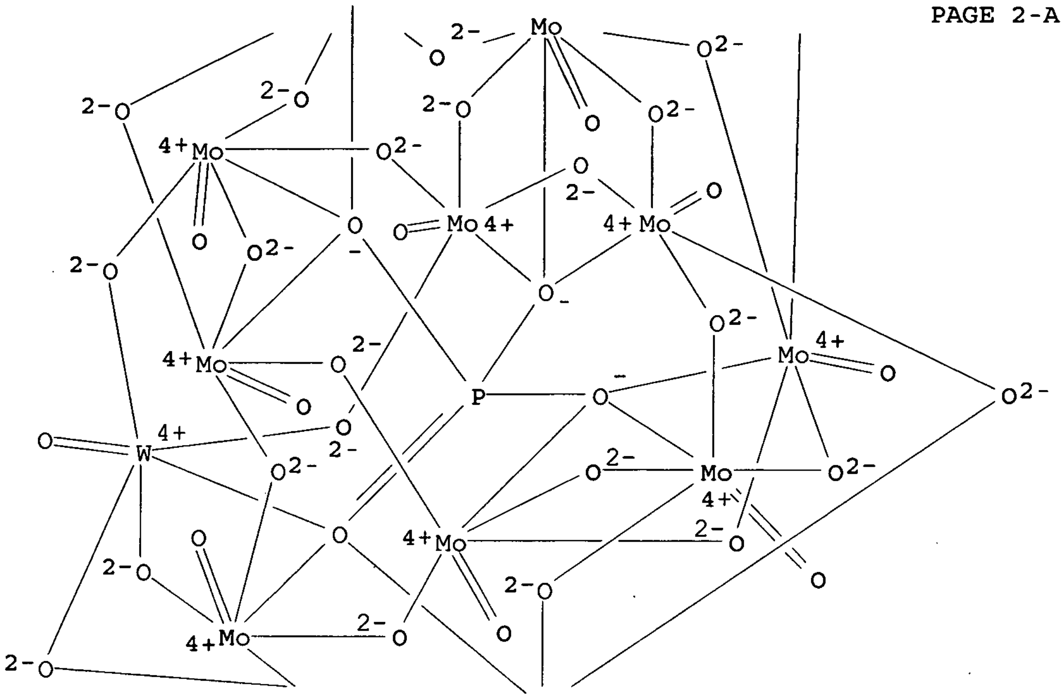
● 3 H^+

RN 92627-51-5 HCAPLUS

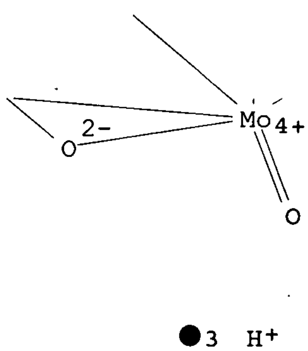
CN Tungstate(3-), (eicosa-μ-oxoundecaoxoundecamolybdate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, trihydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



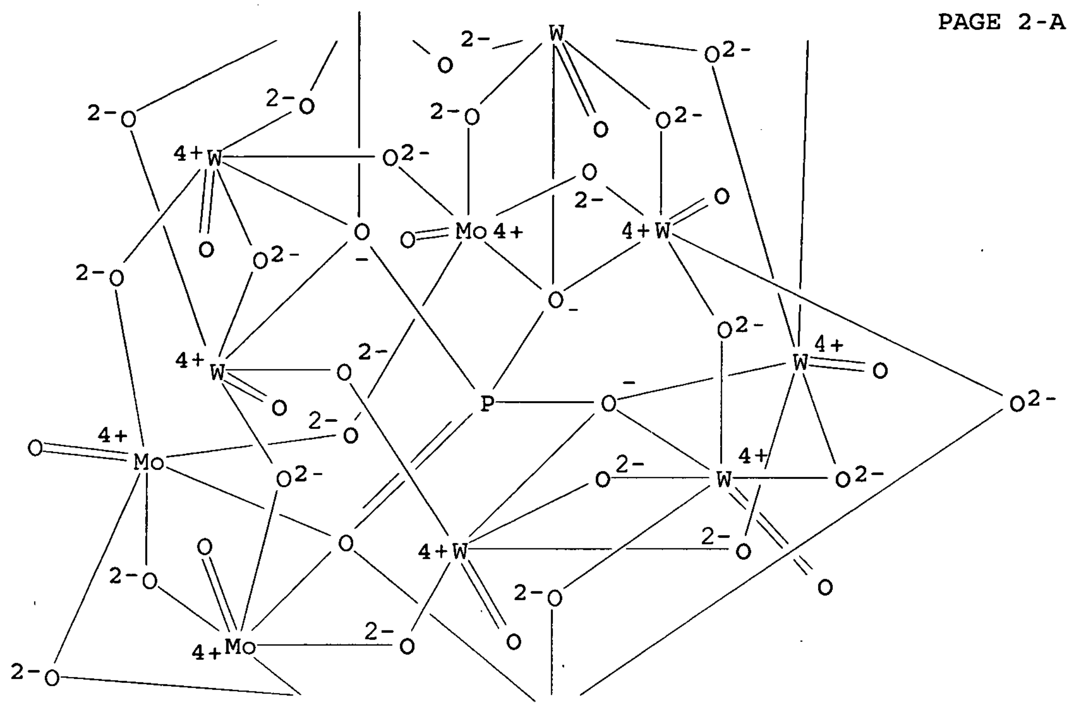
PAGE 3-A



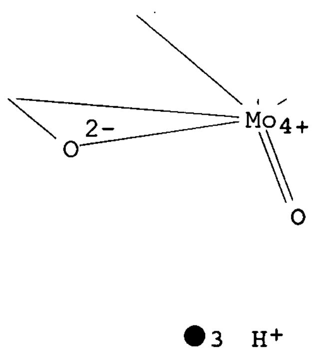
RN 93069-33-1 HCAPLUS
CN Tungstate(3-), eicosa-μ-oxooctaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']](tetra-μ-oxotetraoxotetramolybdate)octa-, trihydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



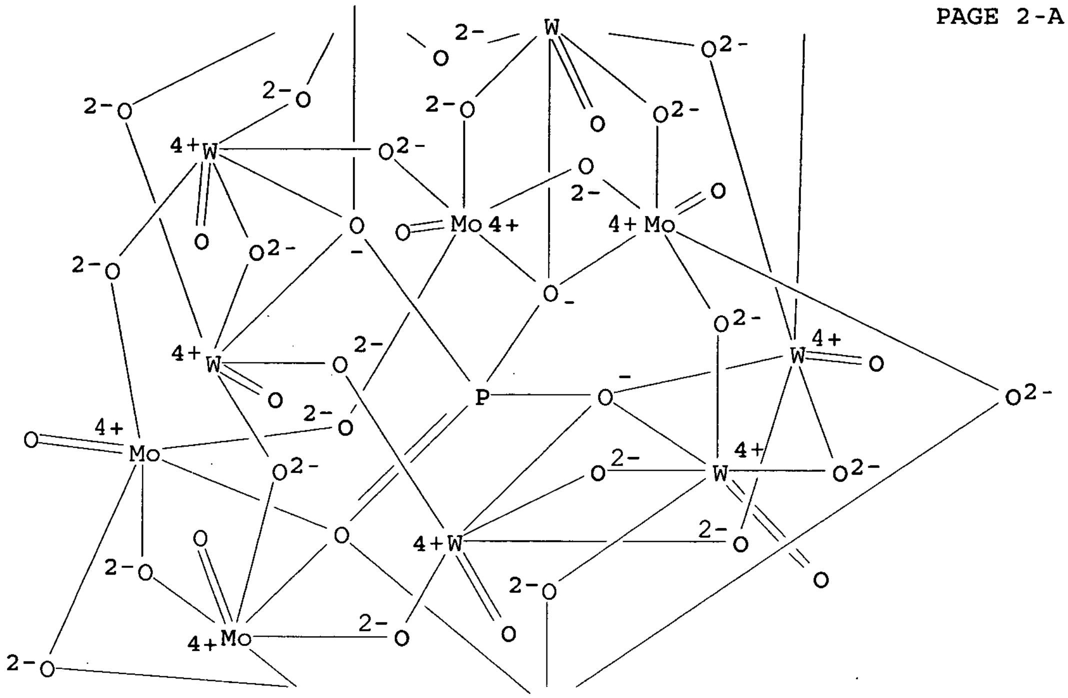
PAGE 3-A



RN 114760-21-3 HCAPLUS
CN Tungstate(3-), (hexa-μ-oxopentaoxopentamolybdate)octadeca-μ-oxoheptaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':κO''']]hepta-, trihydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



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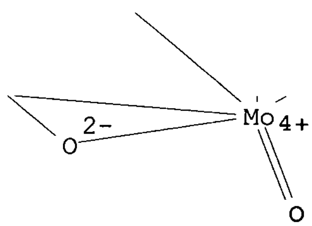


● 3 H^{+}

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 38 OF 70 HCAPLUS
AN 2001:293984 HCAPLUS
DN 135:62967
TI Direct catalytic oxidation of ethylene to acetic acid. I. The **composition** of loaded Pd-heteropoly acid catalyst
AU Yao, Jun-pin; Xu, Pei-ruo; Xu, Zheng-yong; Zhu, Zhi-hua
CS Chemical Engineering College, ECUST, Shanghai, 200237, Peop. Rep. China
SO Huadong Ligong Daxue Xuebao (**2001**), 27(1), 46-50, 93
CODEN: HLIXEV; ISSN: 1006-3080
PB Huadong Ligong Daxue Xuebao Bianjibu
DT Journal
LA Chinese

AB The effect of Pd-HSiW-Cr-Te/SiO2 on direct oxidation of ethylene to acetic acid (I) was researched in a fixed-bed reactor, and the catalyst was investigated by XRD. The results showed that Pd-HSiW-Cr-Te/SiO2 was an ideal catalyst for direct oxidation of C2H4 to acetic acid. Pd and HSiW were the necessary active components and had excellent effect, the suitable contents of them were ωPd = 0.03 and ωHSiW = 0.60 (both based on carrier weight). In order to improve the catalytic performance of Pd-HSiW/SiO2, a series of promotors were studied. As a consequence, Te and Cr had excellent effect. By adding trace Te and Cr, the byproducts CO2 and CH3CHO could be decreased greatly. The suitable contents of Te and Cr were Te:Pd= 1:20 and Cr:Pd= 1:30 (atom ratio). It was discovered by XRD that on the catalyst there was an active structure between Pd and HSiW, and the form of Te and Cr was in oxidative state: Te2O5 and CrO2. When the reaction conditions were as follows: T = 190°, p = 0.80 MPa, SV = 4000 h-1, and the **composition** of reaction mixture gas was C2H4:O2:N2:H2O = 50:6:14:30 (mol ratio); the catalyst had ideal catalytic performance: the conversion of C2H4 and the selectivity of I could reach 3.5% and 84.1% resp., and the byproducts CO2 and CH3CHO were 12.4% and 1.1%. The once-through space time yield of acetic acid could reach 157.8 g/(L·h).

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67

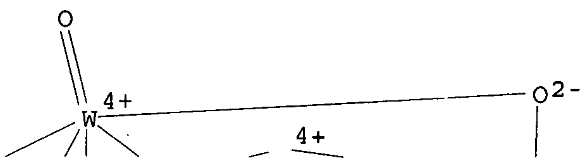
IT 7440-05-3, Palladium, uses 7631-86-9, Silica, uses **12027-38-2**, 12-Tungstosilicic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(direct catalytic oxidation of ethylene to acetic acid with Pd-**heteropoly** acid catalyst containing, promoters)

IT **12027-38-2**, 12-Tungstosilicic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(direct catalytic oxidation of ethylene to acetic acid with Pd-**heteropoly** acid catalyst containing, promoters)

RN 12027-38-2 HCAPLUS

CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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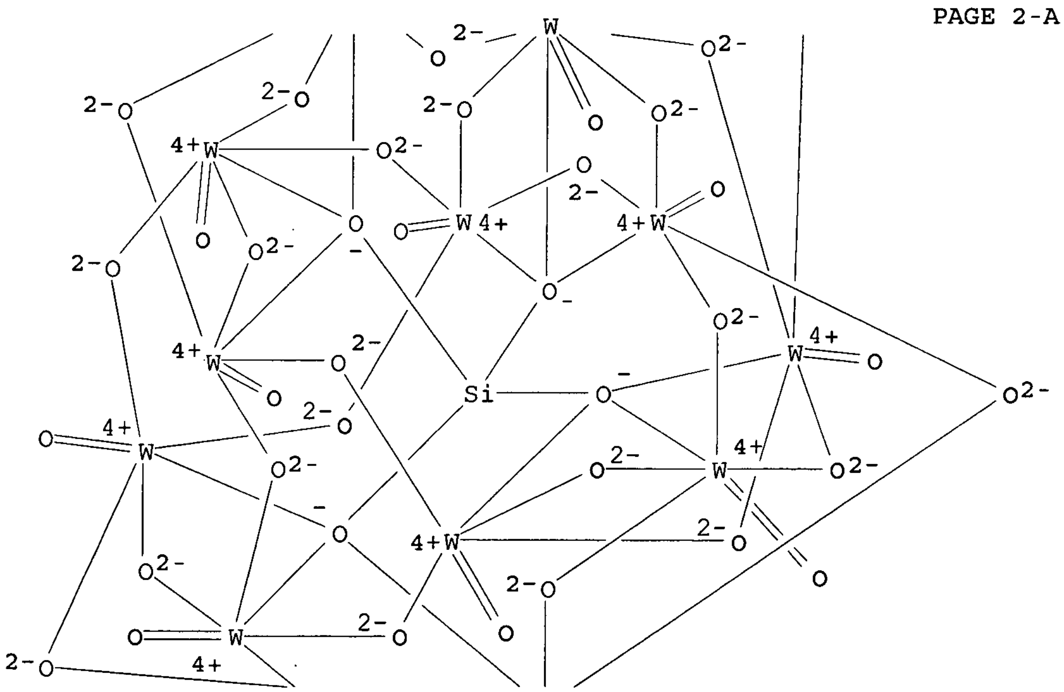

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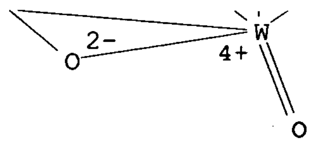

$\bullet 4\ H^+$

L32 ANSWER 39 OF 70 HCAPLUS

AN 2001:265311 HCAPLUS

DN 134:282477

TI Palladium-containing catalyst systems for preparation of acetic acid by gas-phase oxidation of ethylene

IN Obana, Yoshiaki; Abe, Kenichi; Oguchi, Wataru; Yamada, Kenji; Uchida, Hiroshi

PA Showa Denko K. K., Japan

SO PCT Int. Appl., 63 pp.
CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
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	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG					
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	EP 1226868	A1	20020731	EP 2000-964663	20001004	<--
	EP 1226868	B1	20051228			
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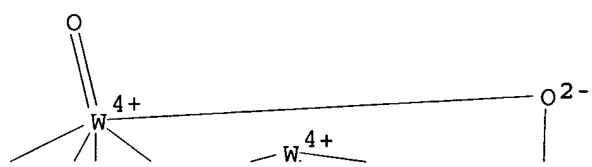
	US 6706919	B1	20040316	US 2000-674920	20001108	<--
PRAI	JP 1999-284522	A	19991005	<--		
	US 1999-164153P	P	19991108	<--		
	JP 2000-151130	A	20000523	<--		
	WO 2000-JP6923	W	20001004	<--		

AB The catalyst systems for preparation of acetic acid by gas-phase oxidation of ethylene comprise catalyst compns., which are supported by supports, containing (a) palladium, (b) heteropoly acids and/or their salts, (c) vanadium and/or molybdenum, and optionally (d) ≥1 Group 14, 15, and 16 elements on Periodic Table and/or (e) Group 7, 8, 9, 10, 11 and 12 elements . Thus, gas mixture of 10/6/15/69 ethylene/oxygen/water/nitrogen was introduced into a reactor filled with silica-supported catalyst containing palladium 1.5, tungstosilicic acid 22 and vanadium 0.025% at 200° and 0.8 MPa to give acetic acid with selectivity 69.0%.

IC ICM B01J023-64

ICS B01J023-68; B01J027-057; B01J027-199; C07C051-21; C07C053-08; C07C061-00
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67
IT **1343-93-7**, 12-Tungstophosphoric acid 7439-92-1, Lead, uses 7439-98-7, Molybdenum, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7440-62-2, Vanadium, uses 7440-66-6, Zinc, uses 7440-69-9, Bismuth, uses 7646-85-7, Zinc chloride, uses 7782-49-2, Selenium, uses 7787-60-2, Bismuth chloride 7803-55-6, Ammonium metavanadate 7803-68-1, Telluric acid (H6TeO6) 10026-22-9, Cobalt **nitrate** hexahydrate 10060-12-5, Chromium chloride hexahydrate 10102-20-2, Telluric acid (H2TeO3), disodium salt 10377-66-9, Manganese **nitrate 12027-38-2** 12027-67-7, Ammonium molybdate **12293-15-1 12293-24-2**, Molybdovanadophosphoric acid (H6PV3Mo9O40) 13494-80-9, Tellurium, uses 16903-35-8, Chloroauric acid 37280-68-5, Molybdovanadophosphoric acid 55128-39-7, Tungstovanadophosphoric acid **75977-42-3**, Molybdophosphoric acid (H4PMo12O40) 120310-77-2, Tungstovanadosilicate (SiVW11O405-)
RL: **CAT (Catalyst use)**; USES (Uses)
(supported catalysts containing palladium, **heteropoly** acids vanadium and/or molybdenum for preparation of acetic acid by gas-phase oxidation of ethylene)
IT **1343-93-7**, 12-Tungstophosphoric acid **12027-38-2** **12293-15-1 12293-24-2**, Molybdovanadophosphoric acid (H6PV3Mo9O40) **75977-42-3**, Molybdophosphoric acid (H4PMo12O40)
RL: **CAT (Catalyst use)**; USES (Uses)
(supported catalysts containing palladium, **heteropoly** acids vanadium and/or molybdenum for preparation of acetic acid by gas-phase oxidation of ethylene)
RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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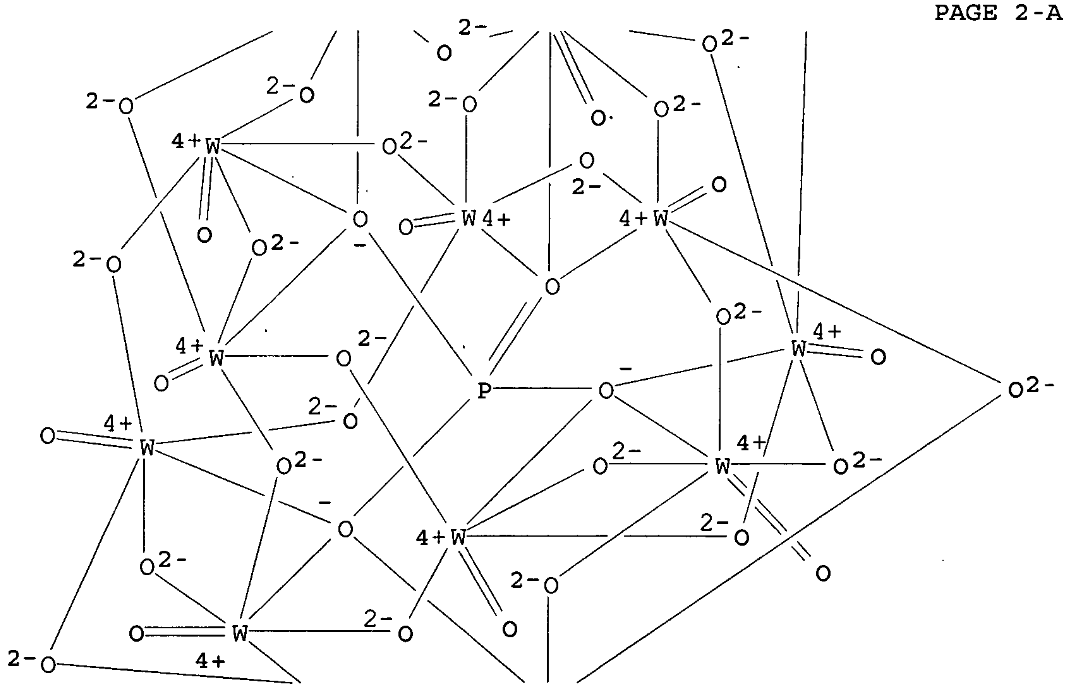

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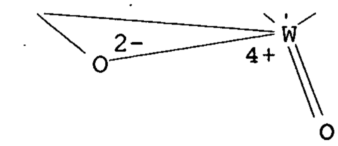
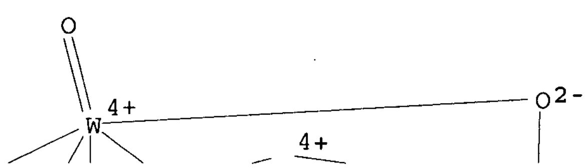


●3 H+

RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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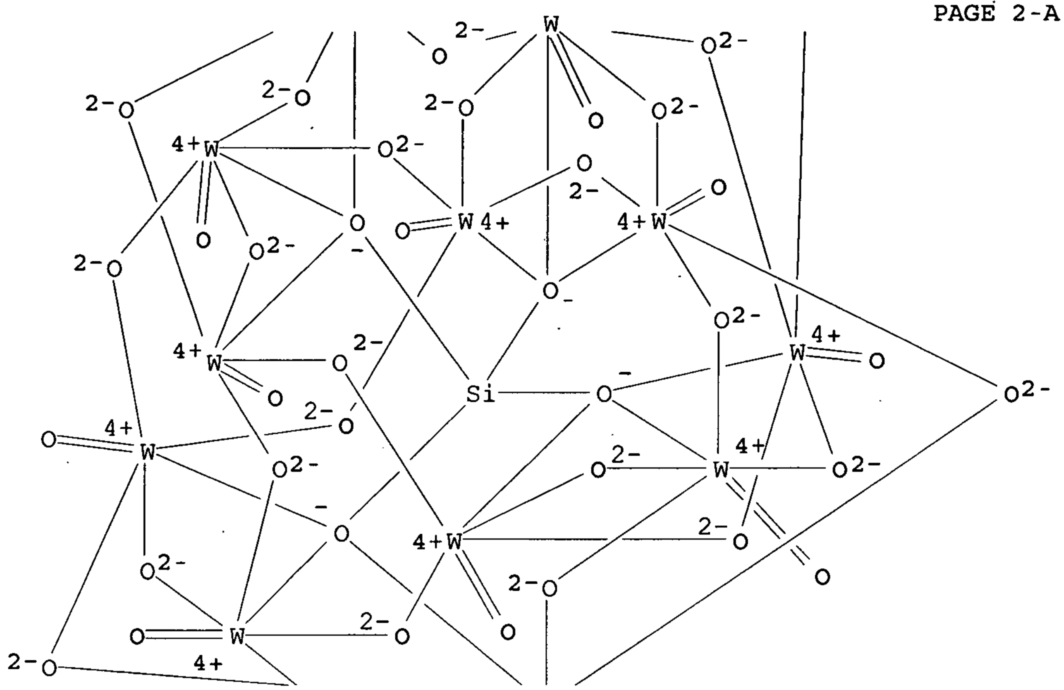

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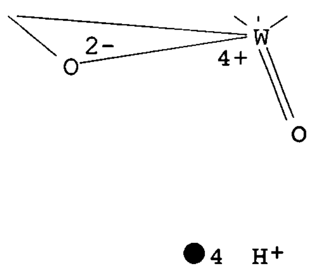
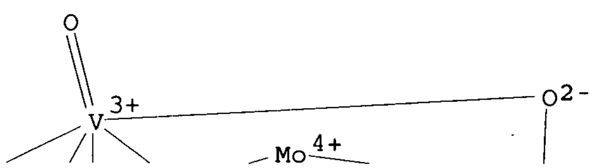


RN 12293-15-1 HCAPLUS
CN Vanadate(4-), (eicosa-μ-oxoundecaoxoundecamolybdate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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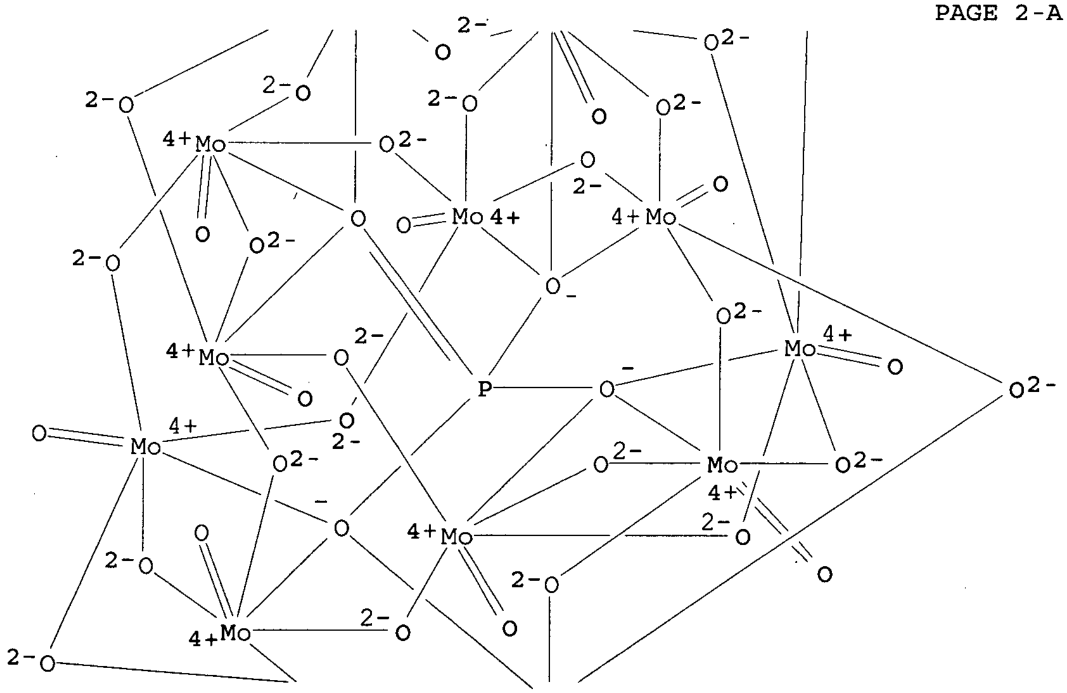
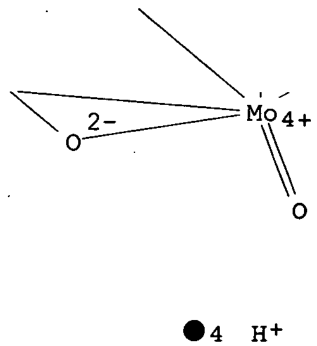
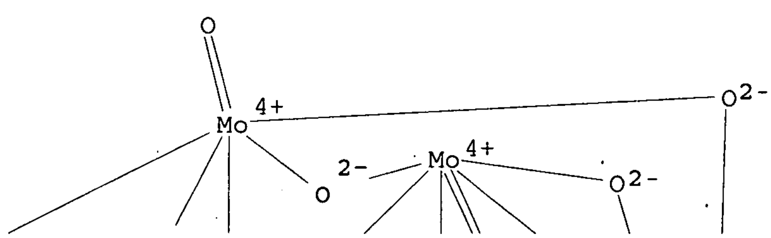




RN 12293-24-2 HCAPLUS
CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxononaoxononamolybdate)[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tri-, hexahydrogen (9CI) (CA INDEX NAME)



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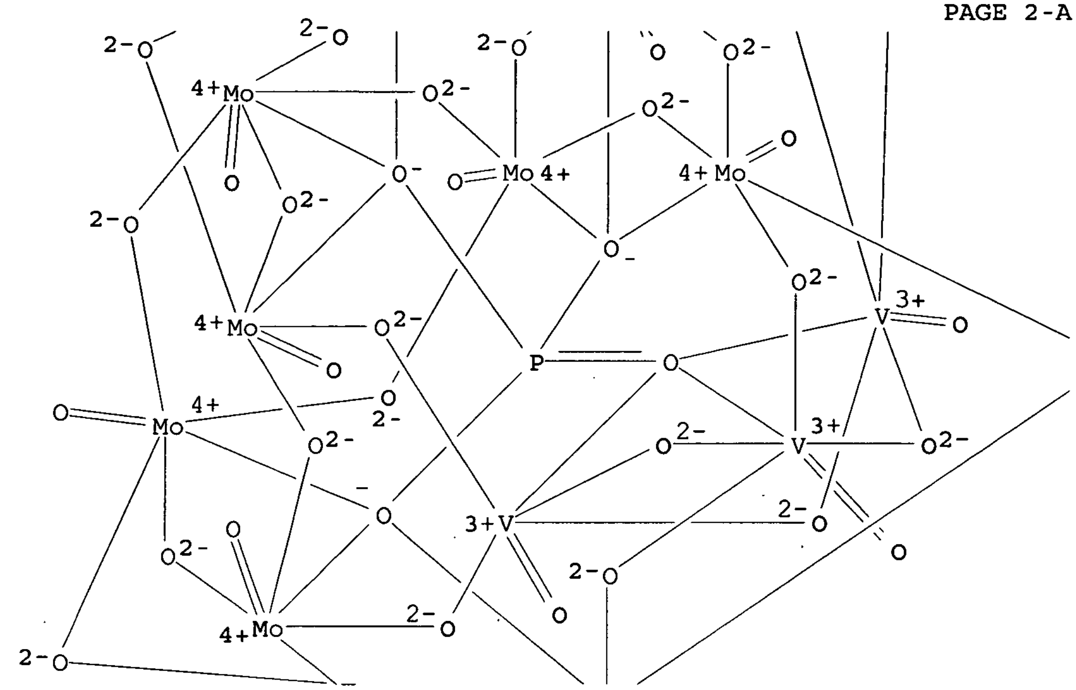

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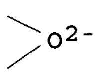

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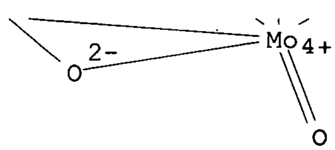
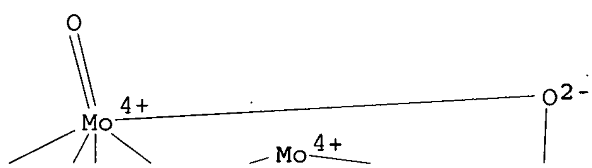


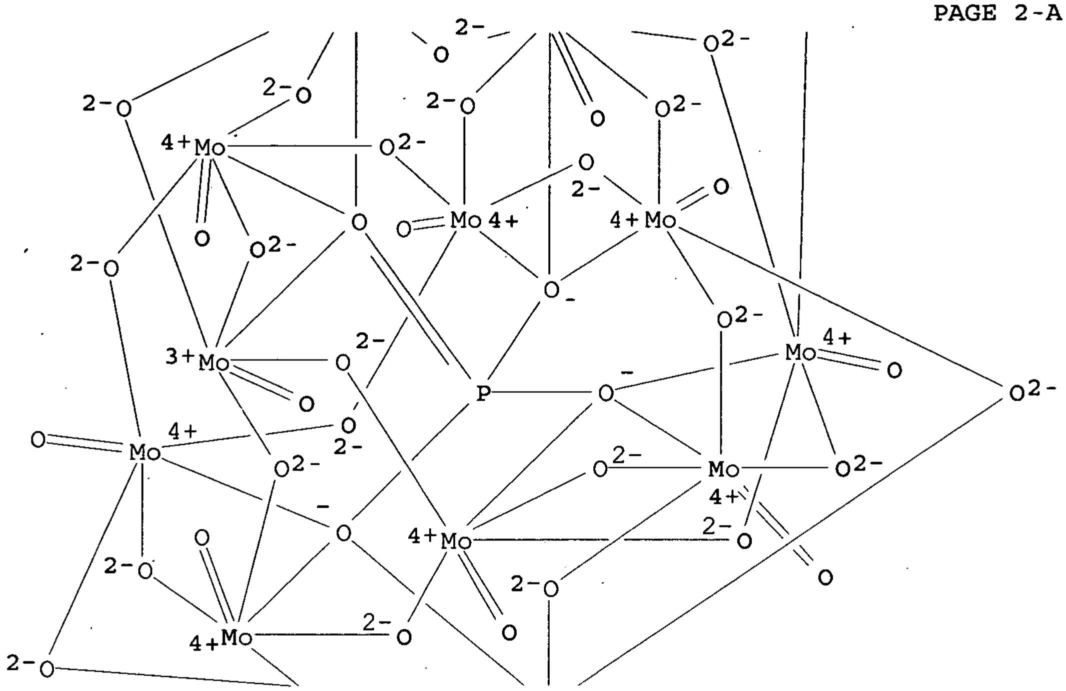
● 6 H^+

RN 75977-42-3 HCAPLUS
CN Molybdate(4-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, tetrahydrogen (9CI) (CA INDEX NAME)

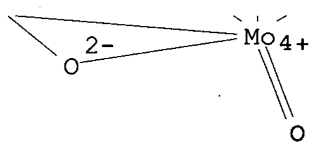
PAGE 1-A



PAGE 2-A



PAGE 3-A



● 4 H^+

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 40 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:204694 HCAPLUS
DN 135:97898
TI Acidity of solutions of heteropoly acids with various structures and **compositions**
AU Timofeeva, M. N.; Maksimov, G. M.; Likholobov, V. A.
CS Boreskov Institute of Catalysis, Siberian Division, Russian Academy of Sciences, Novosibirsk, 630090, Russia
SO Kinetics and Catalysis (Translation of Kinetika i Kataliz) (**2001**), 42(1), 30-34
CODEN: KICAA8; ISSN: 0023-1584
PB MAIK Nauka/Interperiodica Publishing
DT Journal
LA English

AB Hammett acidity functions H0 of solns. of heteropoly acids H5PW11XO40 (X(IV) = Ti, Zr), H3PW12O40, H4SiW12O40, H6P2W21O71, and H21B3W39O132, as well as HClO4 and CF3SO3H, in water and 90% aqueous acetone and acetonitrile, are measured at 20°C by the indicator method. In aqueous solns. all acids under study have the same strength, and in organic solvents their acidities differ. A correlation between the catalytic activity and acidity of the solution is found for the condensation of acetone to mesityl oxide.

CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 23

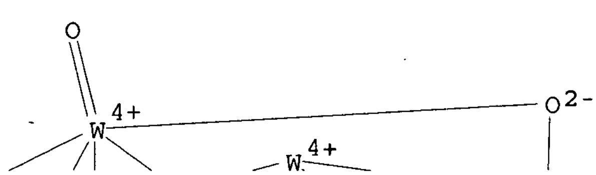
IT **1343-93-7 12027-38-2 104484-97-1**
132826-36-9, Tungsten hydroxide oxide phosphate (W21(OH)6O57(PO4)2)
146066-47-9 243445-97-8
RL: **CAT (Catalyst use)**; PRP (Properties); USES (Uses)
(acidity of solns. of **heteropoly** acids with various structures and compns.)

IT **1343-93-7 12027-38-2 104484-97-1**
146066-47-9
RL: **CAT (Catalyst use)**; PRP (Properties); USES (Uses)
(acidity of solns. of **heteropoly** acids with various structures and compns.)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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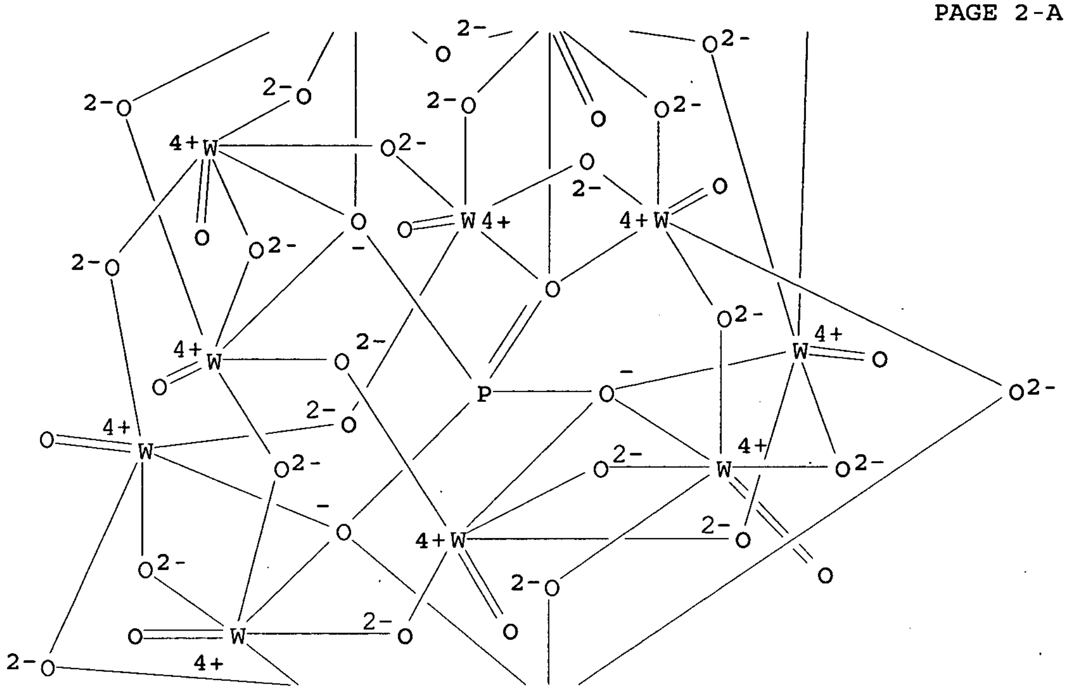

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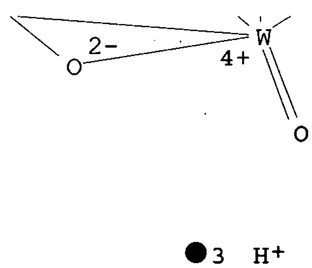
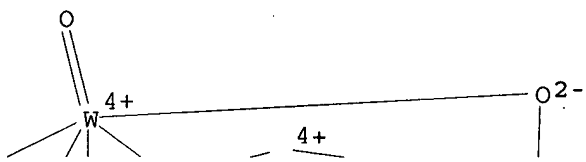


RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp a.O':κO':κO':κO'':κO'':κO'':κO''':.kap pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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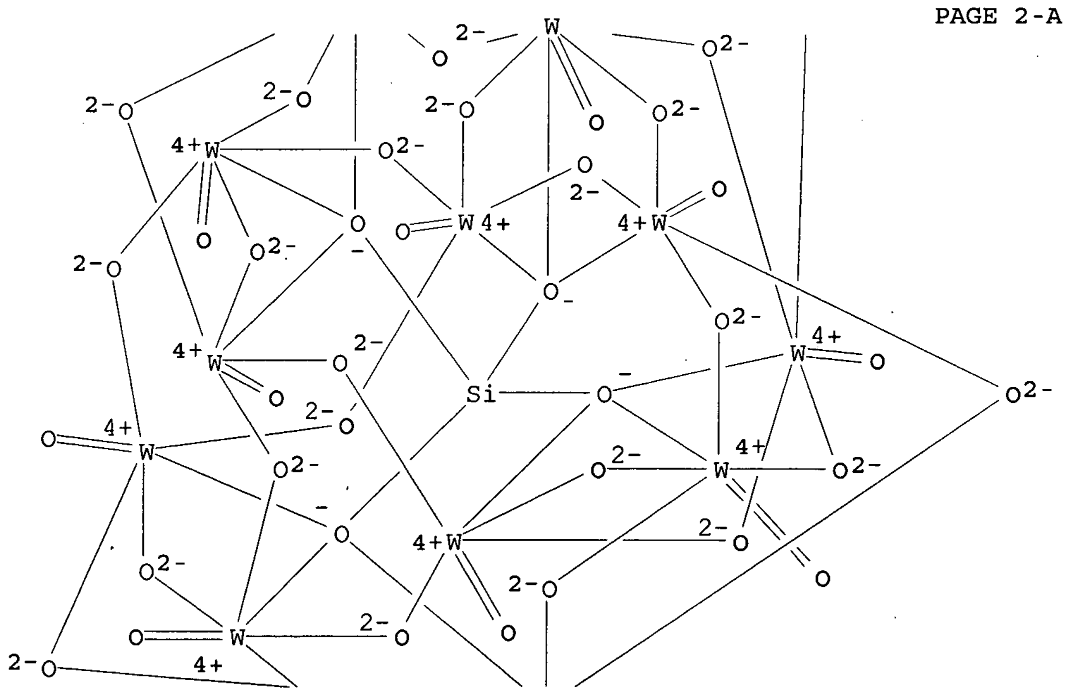

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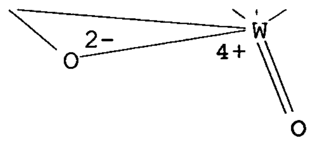
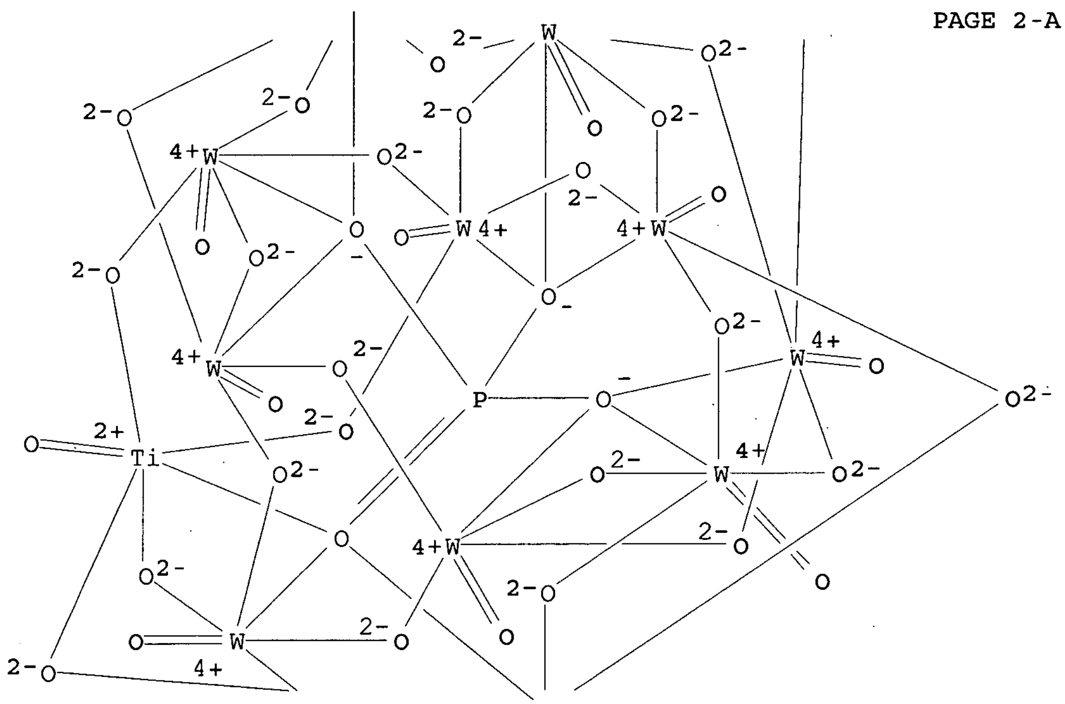


● 4 H^+

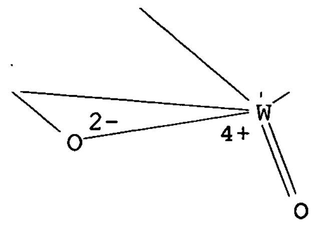
RN 104484-97-1 HCAPLUS
CN Titanate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, pentahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



PAGE 3-A

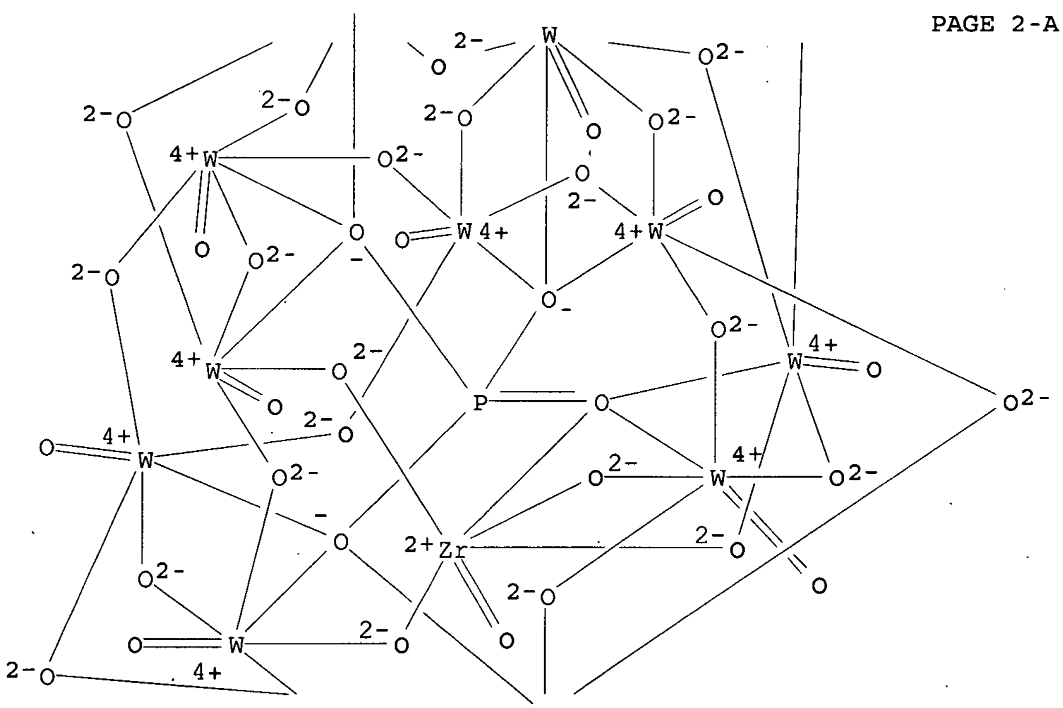


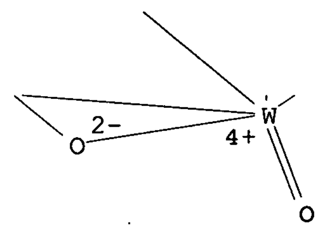
● 5 H^+

RN 146066-47-9 HCAPLUS
CN Zirconate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, pentahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A





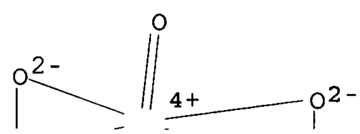
PAGE 3-A

●5 H+

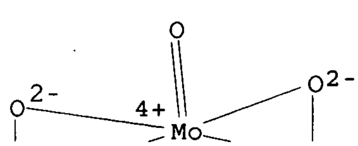
RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 41 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:108943 HCAPLUS
DN 135:61108
TI Selective oxidation of ethylbenzene to acetophenone catalyzed by lanthanum molybdovanadophosphate heteropoly complex
AU Yu, Yaqin; Li, Xiaojing; Lin, Shen
CS Department of Chemistry, Fujian Normal University, Fuzhou, 350007, Peop. Rep. China
SO Huaxue Yanjiu Yu Yingyong (**2000**), 12(6), 654-657
CODEN: HYYIFM; ISSN: 1004-1656
PB Huaxue Yanjiu Yu Yingyong Bianjibu
DT Journal
LA Chinese
OS CASREACT 135:61108
AB The lanthanum molybdovanadophosphoric quaternary heteropoly complex was synthesized by copptn., and its structure was identified as (NH4)15[La(PMo9V2O39)2] 6H2O. The catalytic effect of the complex for selective oxidation of ethylbenzene to acetophenone was studied. The suitable conditions for the oxidation reaction was presented.
CC 25-16 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
IT 10099-59-9, Lanthanum **nitrate** 12293-21-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(for preparation of lanthanum molybdovanadophosphate heteropoly complex)
IT **345958-71-6**
RL: **CAT (Catalyst use)**; USES (Uses)
(selective oxidation of ethylbenzene to acetophenone catalyzed by lanthanum molybdovanadophosphate **heteropoly** complex)
IT **345958-71-6**
RL: **CAT (Catalyst use)**; USES (Uses)
(selective oxidation of ethylbenzene to acetophenone catalyzed by lanthanum molybdovanadophosphate **heteropoly** complex)
RN 345958-71-6 HCAPLUS
CN Lanthanate(15-), hexadeca-μ-oxobis(μ-oxodioxodivanadate)bis(pentadeca-μ-oxononaoxononamolybdate)bis[μ11-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''']]-, pentadecaammonium (9CI) (CA INDEX NAME)

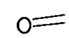
PAGE 1-B



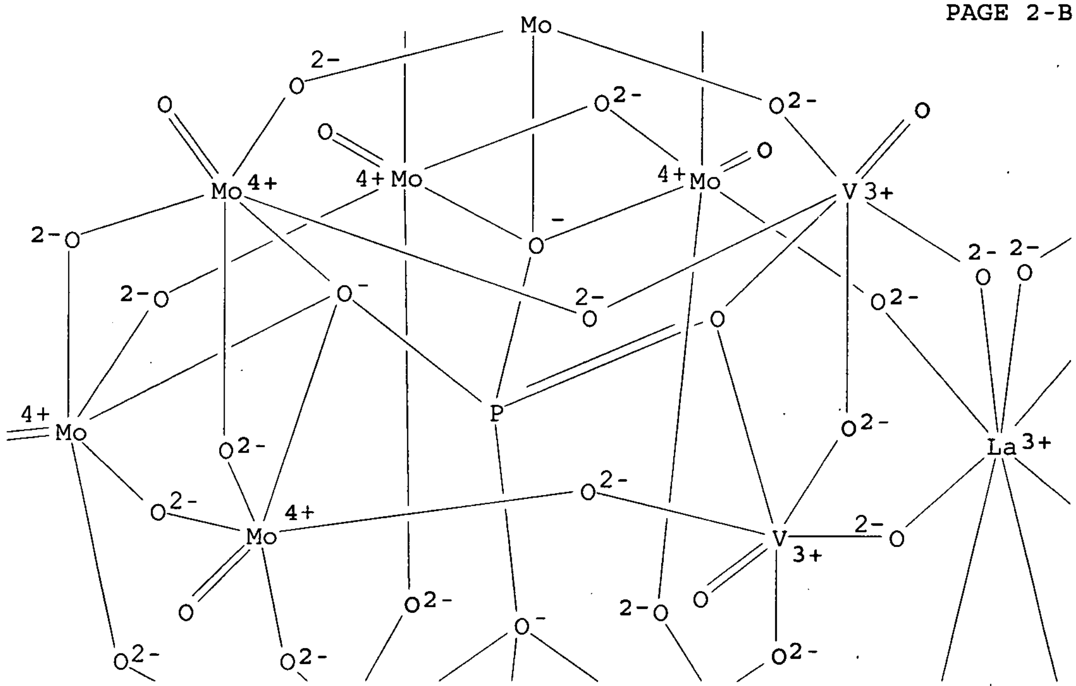
PAGE 1-C



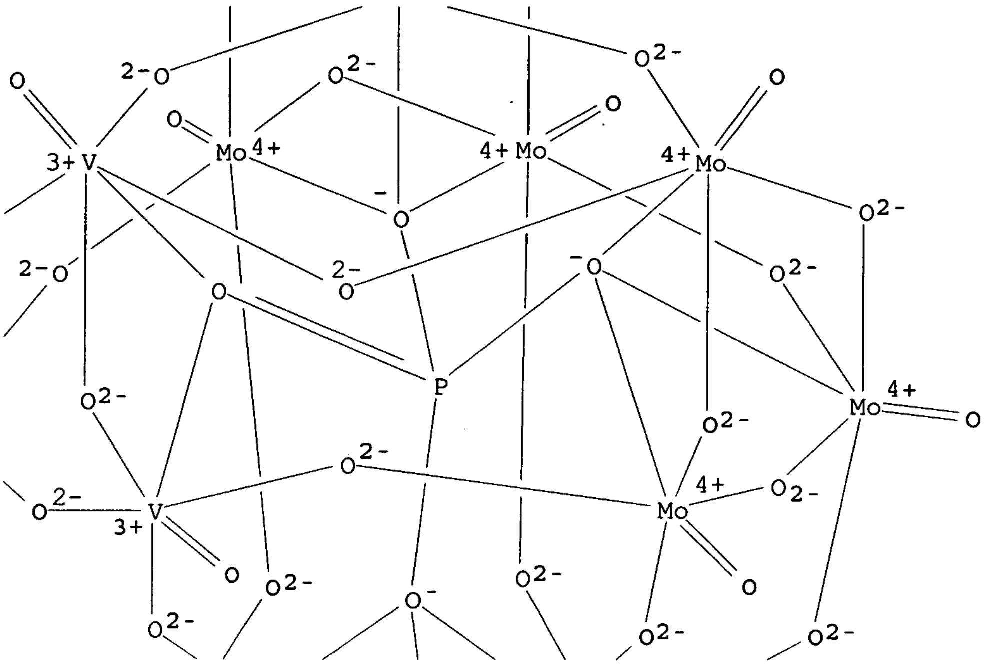
PAGE 2-A



PAGE 2-B



PAGE 2-C



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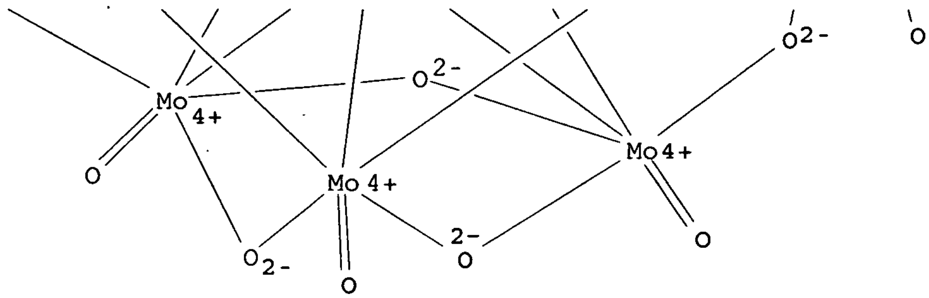
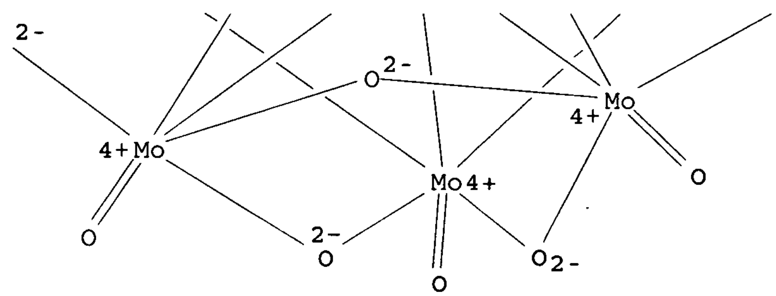
●15 NH_4^+

PAGE 3-B



PAGE 3-C



L32 ANSWER 42 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:30612 HCAPLUS
DN 134:207455
TI Coupling of phenol with ketones in the presence of heteropoly acids with different structures and **compositions**
AU Timofeeva, M. N.; Maksimov, G. M.; Utkin, V. A.; Likholobov, V. A.
CS Boreskov Institute of Catalysis, Siberian Division, Russian Academy of Sciences, Novosibirsk, 630090, Russia
SO Kinetics and Catalysis (Translation of Kinetika i Kataliz) (**2000**), 41(6), 767-770
CODEN: KICAA8; ISSN: 0023-1584
PB MAIK Nauka/Interperiodica Publishing
DT Journal
LA English
OS CASREACT 134:207455
AB The reactions of phenol coupling with ketones MeCOR (R = CH3, C2H5, C3H7, and t-butyl) are studied in the presence of heteropoly acids with different structures and compns. in toluene solns. ([PhOH]/[MeCOR] = (2-8)/1 mol/mol; 50-70°) with thioglycolic acid added as a promoter. The reaction rate depends on ketone and heteropoly acid, and the yield of bisphenols is as high as 24-72%. The reaction orders are 0.68, 0.77, and 0.97 with respect to H6P2W21O71, H3PW12O40, and H4SiW12O40, resp., and the activation energies are 25.1, 21.0, and 20.6 kcal/mol, resp. Heteropoly acids of the Dawson structure exhibited the highest activity.
CC 22-4 (Physical Organic Chemistry)
Section cross-reference(s): 78
IT **12207-90-8 12411-74-4**, Tungstophosphoric acid (H6P2W18O62)
RL: **CAT (Catalyst use)**; USES (Uses)

(Dawson; coupling of phenol with ketones in the presence of **heteropoly** acids)

IT **1343-93-7**, Tungstophosphoric acid (H3PW12O40) **12026-57-2**, Molybdophosphoric acid(H3Mo12PO40) **12027-38-2** **12411-60-8** **104484-97-1** **146066-47-9**
RL: **CAT (Catalyst use)**; USES (Uses)
(Keggin; coupling of phenol with ketones in the presence of **heteropoly** acids)

IT **146703-29-9** **328564-39-2**
RL: **CAT (Catalyst use)**; USES (Uses)
(coupling of phenol with ketones in the presence of **heteropoly** acids)

IT **12207-90-8** **12411-74-4**, Tungstophosphoric acid (H6P2W18O62)
RL: **CAT (Catalyst use)**; USES (Uses)
(Dawson; coupling of phenol with ketones in the presence of **heteropoly** acids)

RN 12207-90-8 HCAPLUS

CN Molybdate(6-), hexatriaconta-μ-oxooctadecaoxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':κO'':.kapp a.O''':κO''']]octadeca-, hexahydrogen (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 12411-74-4 HCAPLUS

CN Tungstate(6-), hexatriaconta-μ-oxooctadecaoxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':κO'':.kapp a.O''':κO''']]octadeca-, hexahydrogen (9CI) (CA INDEX NAME)

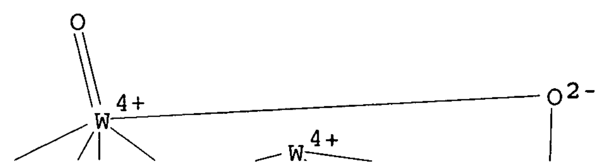
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **1343-93-7**, Tungstophosphoric acid (H3PW12O40) **12026-57-2**, Molybdophosphoric acid(H3Mo12PO40) **12027-38-2** **12411-60-8** **104484-97-1** **146066-47-9**
RL: **CAT (Catalyst use)**; USES (Uses)
(Keggin; coupling of phenol with ketones in the presence of **heteropoly** acids)

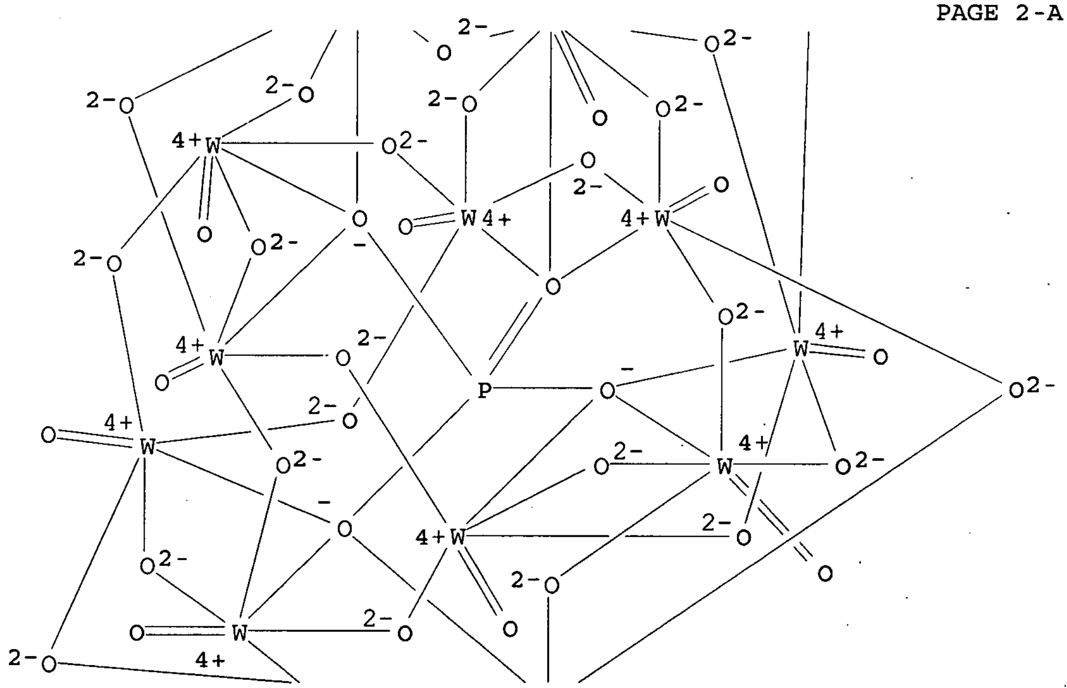
RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

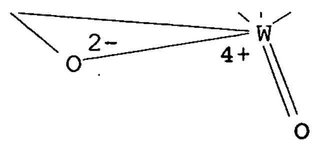
PAGE 1-A



PAGE 2-A

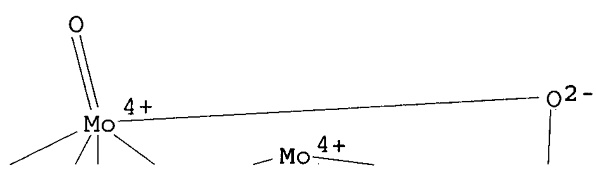


PAGE 3-A

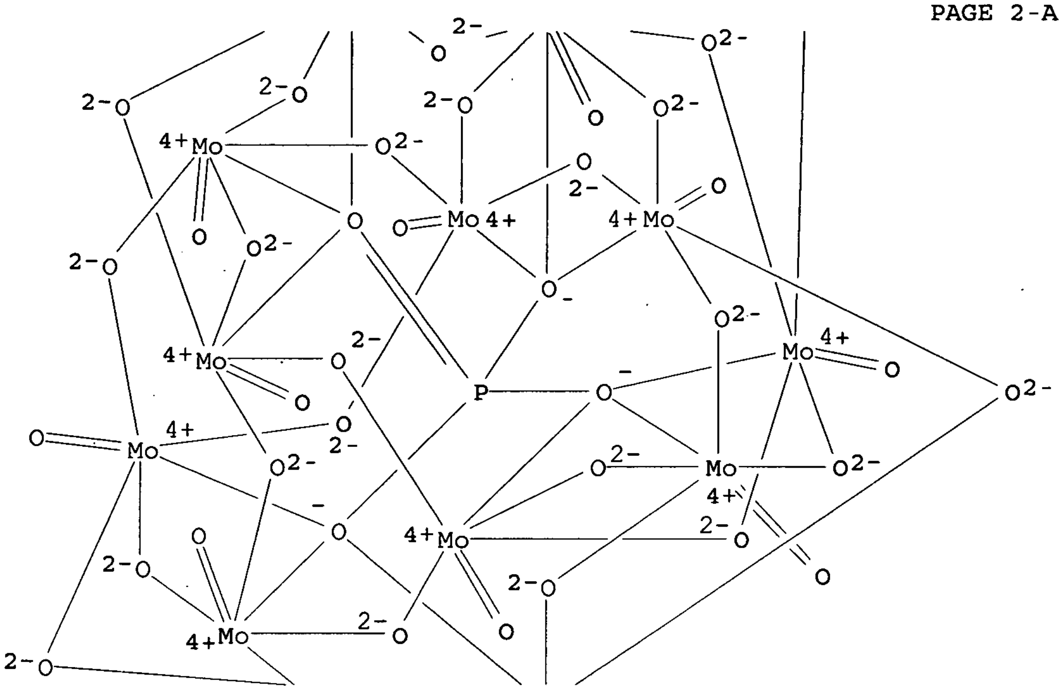


RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



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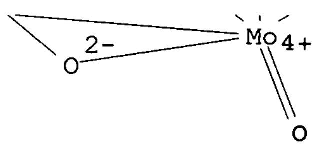
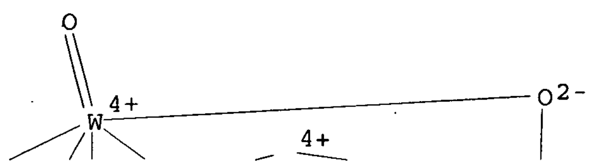


● 3 H^+

RN 12027-38-2 HCAPLUS

CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kappa.O':κO':κO':κO'':κO'':κO'':κO''':.kappa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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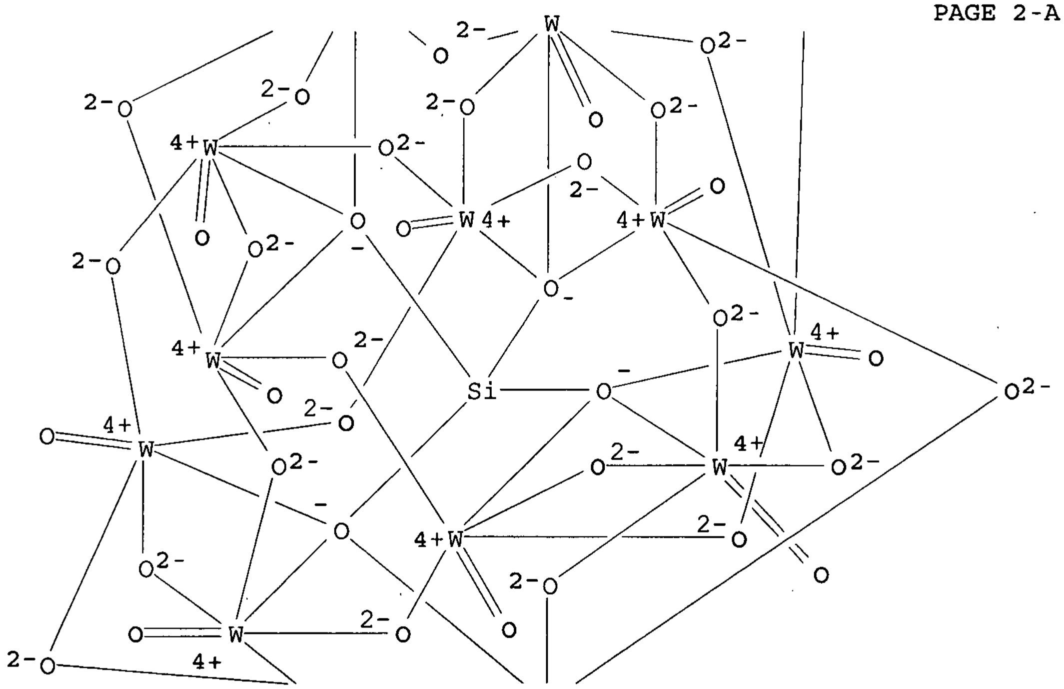

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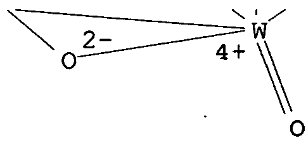
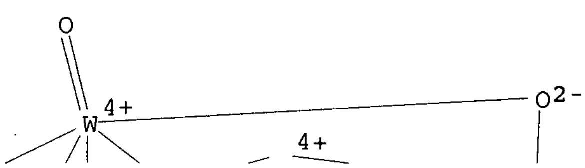


RN 12411-60-8 HCAPLUS

CN Tungstate(3-), (octa-μ-oxohexaoxohexamolybdate)hexadeca-μ-oxohexaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]hexa-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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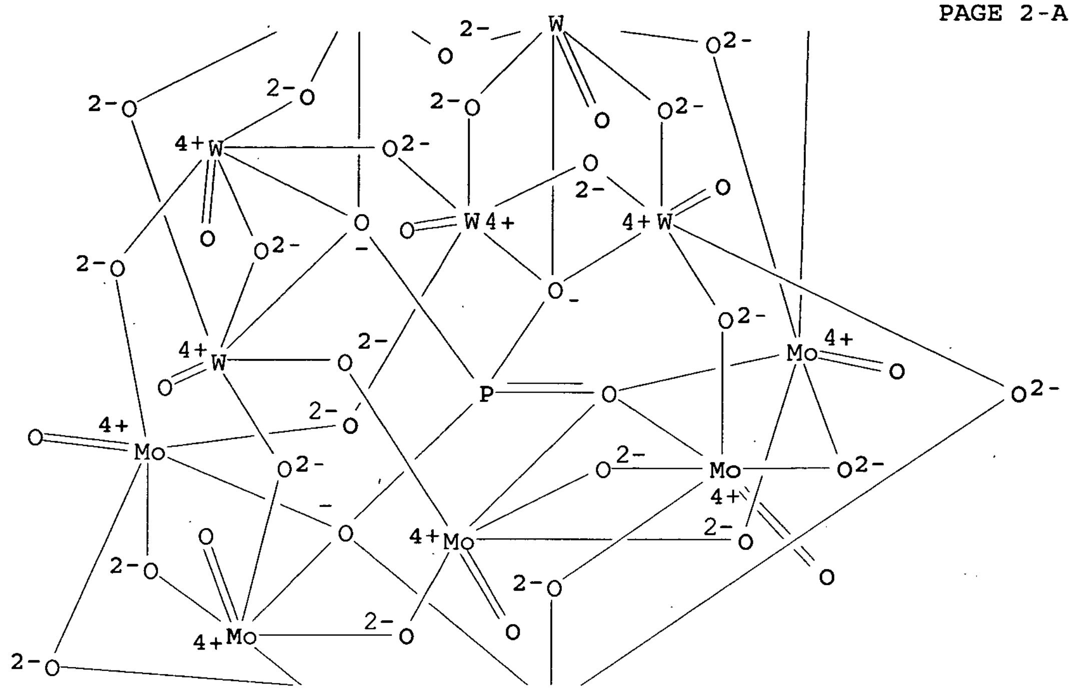

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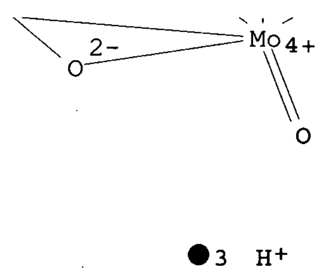
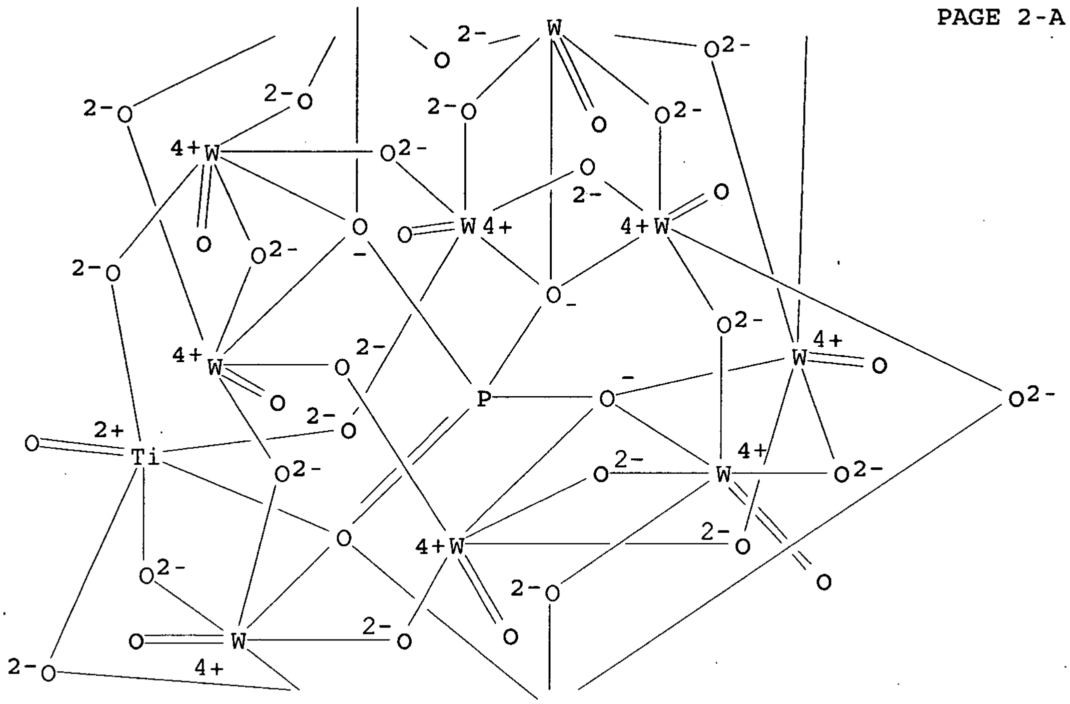


RN 104484-97-1 HCAPLUS
CN Titanate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, pentahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



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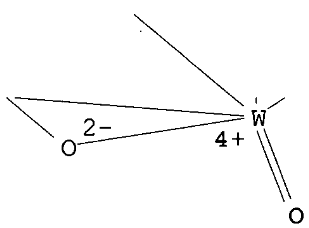


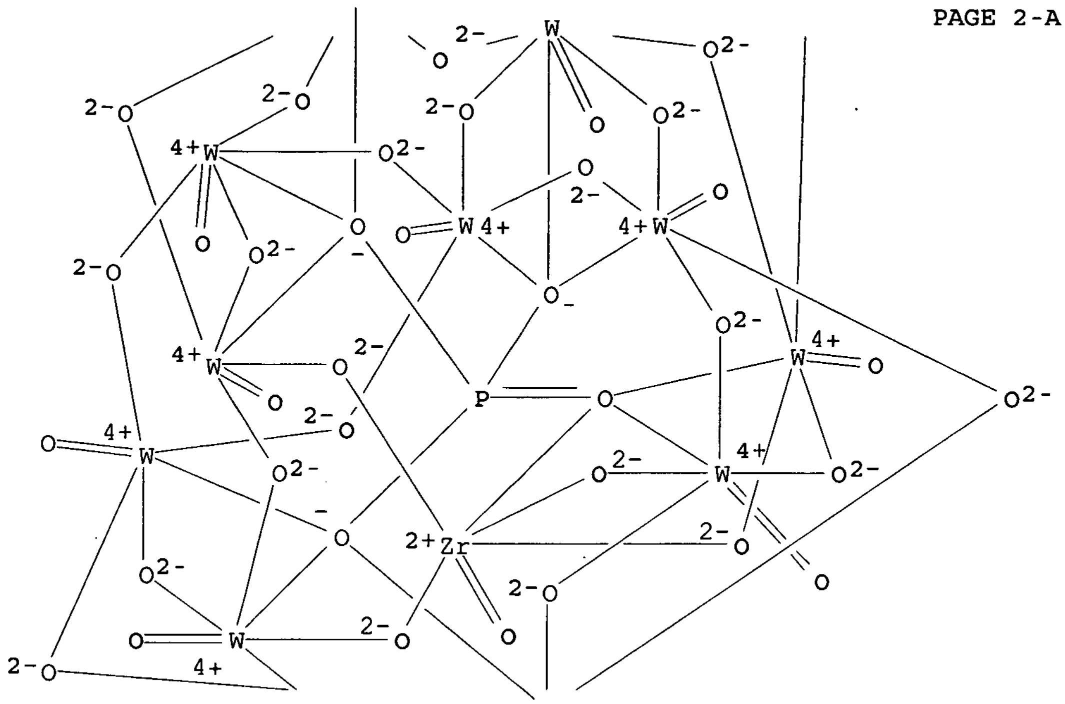
● 5 H^+

RN 146066-47-9 HCAPLUS

CN Zirconate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, pentahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



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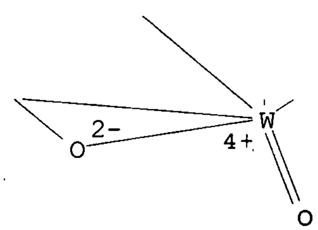


●5 H^+

IT 146703-29-9 328564-39-2
RL: **CAT (Catalyst use)**; USES (Uses)
(coupling of phenol with ketones in the presence of **heteropoly** acids)

RN 146703-29-9 HCAPLUS

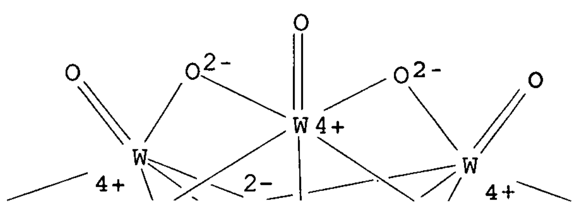
CN Cerate(10-), bis[eicosa-μ-oxoundecaoxo[μ11-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''']]undecatungstate]octa-μ-oxo-, decahydrogen (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 328564-39-2 HCAPLUS

CN Tungstate(6-), dotetraconta-μ-oxoheneicosaoxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':κO'':.kapp a.O''':κO''']]heneicosa-, hexahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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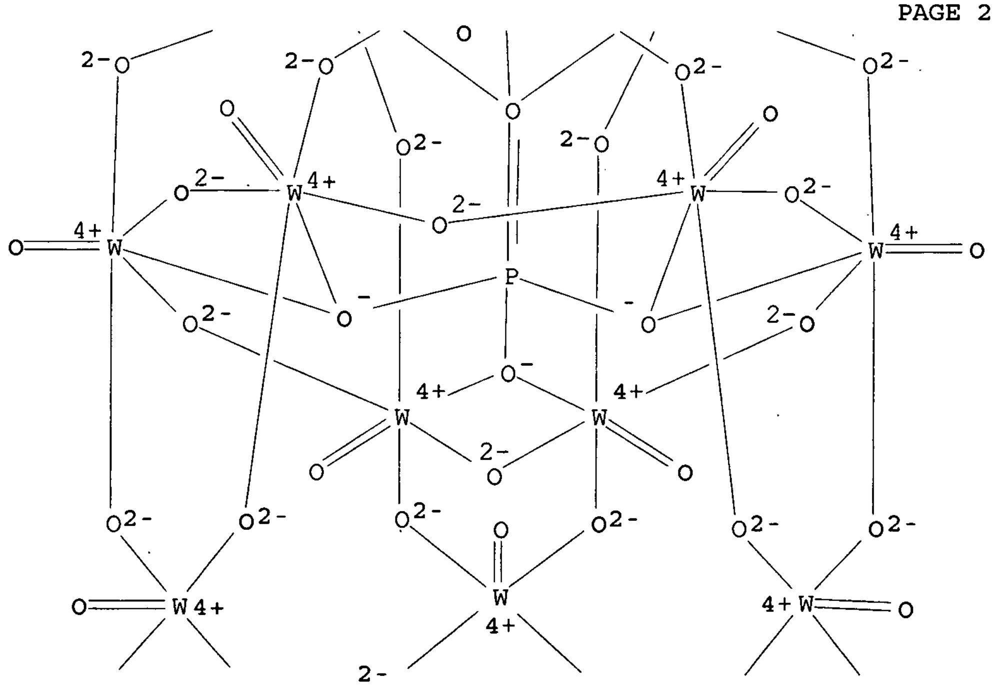

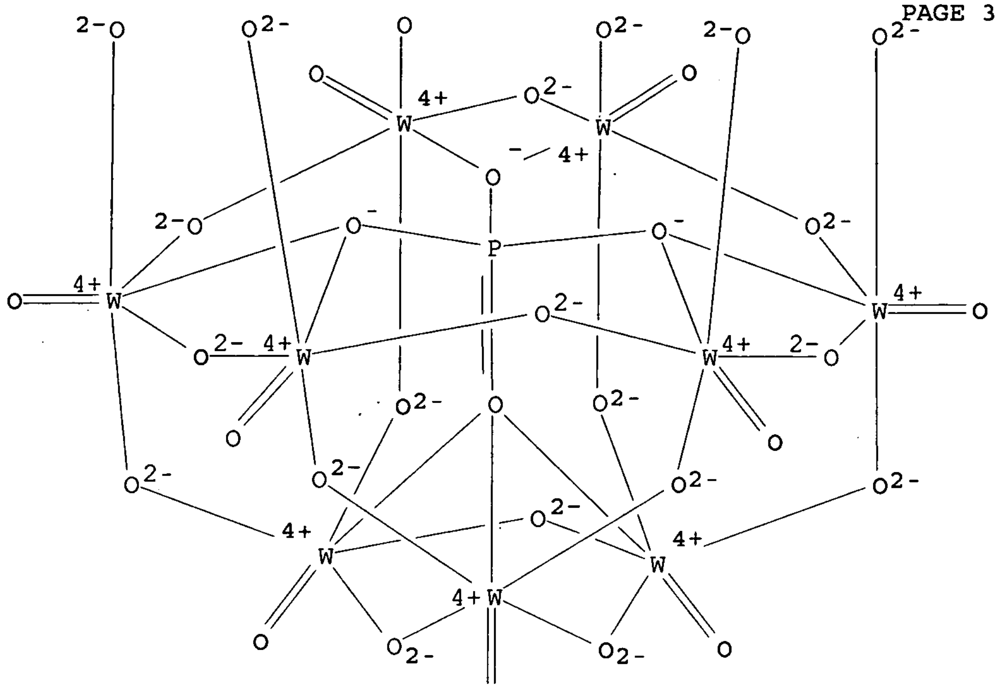

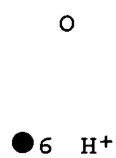

RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 43 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:861650 HCAPLUS
DN 134:17282
TI Process and hetero polyacid catalysts for the preparation of peroxy ketals from ketones and hydroperoxides
IN Frenkel, Peter; Pettijohn, Ted M.
PA Crompton Corporation, USA
SO PCT Int. Appl., 12 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	WO 2000073268	A1	20001207	WO 2000-US14560	20000525	<--

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         IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG,
         MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,
         TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ,
         MD, RU, TJ, TM
     RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
         DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
         CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     US 6180832          B1     20010130    US 1999-321288          19990527 <--
     EP 1100776          A1     20010523    EP 2000-937821          20000525 <--
     EP 1100776          B1     20031015
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO
     AT 252076           E      20031115    AT 2000-937821          20000525 <--
PRAI US 1999-321288      A      19990527  <--
     WO 2000-US14560     W      20000525  <--
OS   CASREACT 134:17282
```

AB Peroxy ketals [e.g., 1,1-bis(tert-butylperoxy)cyclohexane] are prepared in high yield and selectivity by reacting an aqueous **composition** comprising a ketone (e.g., cyclohexanone) and a hydroperoxide (e.g., tert-Bu hydroperoxide) in the presence of a heteropoly acid (e.g., phosphotungstic acid) catalyst.

IC ICM C07C409-22
ICS C07C407-00

CC 24-5 (Alicyclic Compounds)
Section cross-reference(s): 21, 67

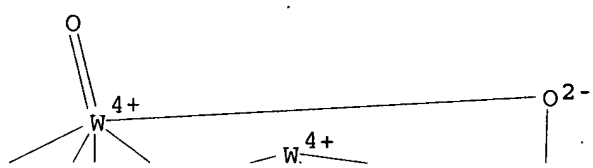
IT **1343-93-7**, Phosphotungstic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(process and **heteropoly** acid catalysts for the preparation of peroxy ketals from ketones and hydroperoxides)

IT **1343-93-7**, Phosphotungstic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(process and **heteropoly** acid catalysts for the preparation of peroxy ketals from ketones and hydroperoxides)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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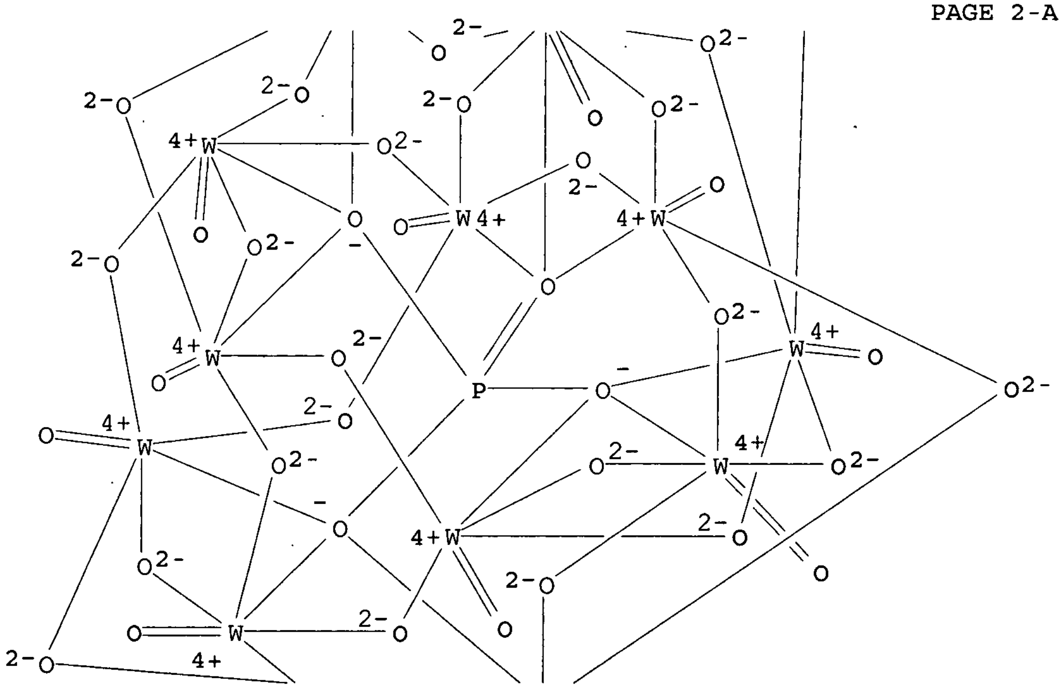

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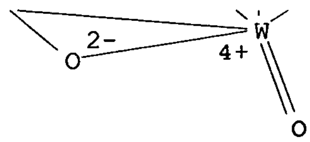


●3 H+

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

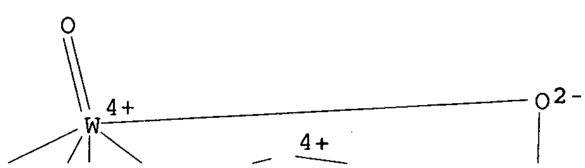
L32 ANSWER 44 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:780819 HCAPLUS
DN 133:336871
TI Preparation of catalysts for gas-phase oxidation of ethylene and manufacture of acetic acid therewith
IN Obana, Yoshiaki; Abe, Kenichi; Uchida, Hiroshi; Sano, Kenichi
PA Showa Denko K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	---------------	----	--------	--------------------	--------
PI	JP 2000308830	A2	20001107	JP 1999-106359	19990414 <--
PRAI	JP 1999-49739	A	19990226 <--		

AB Supported Pd metal and heteropoly acid (salt) catalysts are prepared in 4 steps, i.e., (1) impregnation of an aqueous solution of H2O-soluble Pd compds. into a catalyst support, (2) contacting the impregnated support with a solution of Ba salts which react with the H2O-soluble Pd compds. to form H2O-insol. Pd compds. on the support, (3) reduction of the supported Pd compds. into Pd metal, and (4) supporting heteropoly acids and/or their salts also on the resulting support. Thus, spherical SiO2 (KA 1) was immersed in an aqueous solution of Na2PdCl4, treated with an aqueous Ba(OH)2.8H2O solution, further treated with N2H4.H2O, washed, dried, immersed in an aqueous solution of H4SiW12O40.nH2O, and dried to give a supported catalyst showing high space time yield in reaction of a mixture gas of ethylene, O, H2O, and N into AcOH.
IC ICM B01J023-652
ICS B01J023-44; C07C051-21; C07C053-08; C07B061-00
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67
IT 1333-78-4, Potassium antimonate 7646-85-7, Zinc chloride, processes 7783-08-6, Selenic acid 10102-20-2, Sodium tellurite 10361-44-1, Bismuth **nitrate** 10431-47-7 11120-48-2, Telluric acid **12027-38-2**, Silicotungstic acid (H4SiW12O40) 16903-35-8, Chloroauric acid 39345-92-1, Chromium chloride
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(preparation of supported palladium/**heteropoly** acid catalysts for oxidation of ethylene into acetic acid)
IT **12027-38-2**, Silicotungstic acid (H4SiW12O40)
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(preparation of supported palladium/**heteropoly** acid catalysts for

oxidation of ethylene into acetic acid)
RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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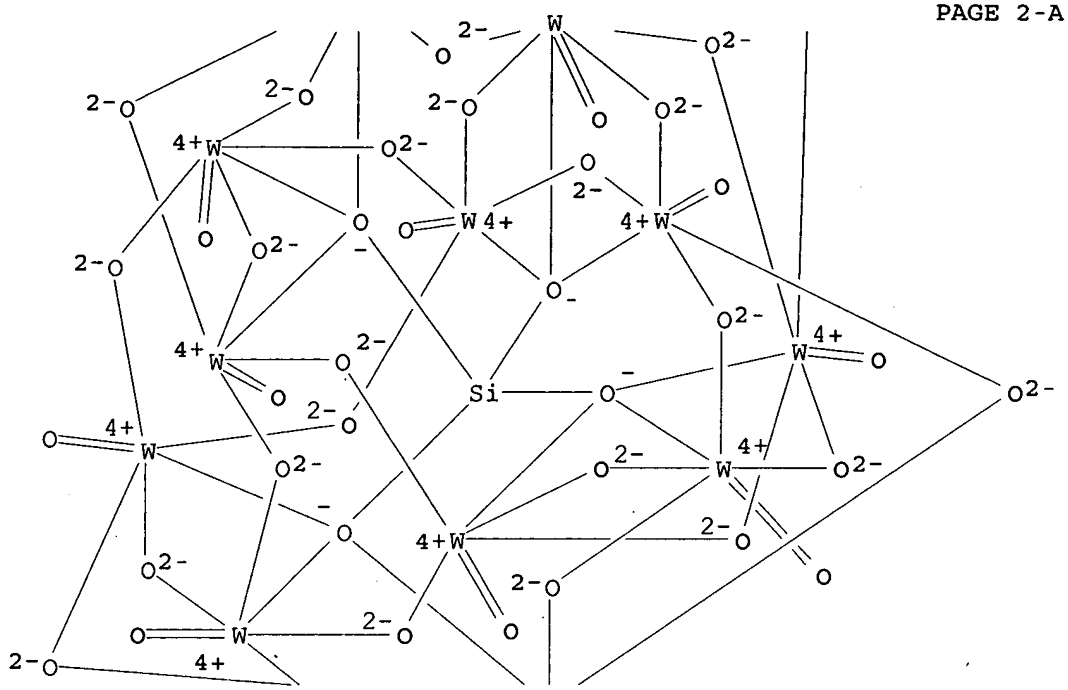

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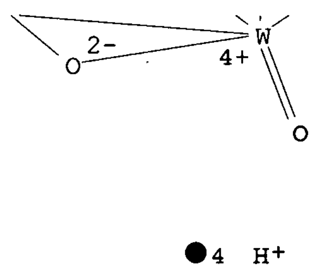


L32 ANSWER 45 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:735119 HCAPLUS
DN 134:60670
TI Polyoxometallate-Modified Fabrics: New Catalytic Materials for Low-Temperature Aerobic Oxidation
AU Xu, Ling; Boring, Eric; Hill, Craig L.
CS Department of Chemistry, Emory University, Atlanta, GA, 30322, USA
SO Journal of Catalysis (**2000**), 195(2), 394-405
CODEN: JCTLA5; ISSN: 0021-9517
PB Academic Press
DT Journal
LA English
AB The polyoxometalate H5PV2Mo10O40 (1) is deposited on cotton cloth, polyacrylic fiber, nylon fiber, carbon powder (Ambersorb 572), and the Japanese "self-deodorizing" fabric Smoklin by immersion of these materials in aqueous solns. of 1 followed by evaporation of water. DRIFT spectra and chemical

reactivity indicate that 1 is not damaged during deposition on the materials. More significantly, they catalyze O2-based oxidns. of two representative and common toxics in air, acetaldehyde and 1-propanethiol, in addition to a representative thioether, tetrahydrothiophene. These aerobic oxidns. proceed heterogeneously with the substrates in the liquid phase and under unusually mild conditions (mostly ambient temperature and pressure). One representative reaction, CH3CHO + O2 CH3COOH, catalyzed by several 1-fabric materials is examined in some detail. Kinetics, radical scavenging, and other expts. are consistent with the 1-fabric functioning primarily as a radical chain initiator. Surface area measurements and SEM of two representative materials, 1-polyacrylic and 1-Smoklin, before and after deposition of 1 and after catalysis indicate that the fibers are not demonstrably altered by deposition of 1, and that the 1-fabric catalysts are not significantly deactivated by use. In all cases, the surface areas are <0.5 m2/g by BET N2 adsorption, and the deposition morphol. is clumps of 1 microcrystals covering <5% of the fiber/cloth surface. Smoklin, designed and specified to be effective at removing the toxic and/or odorous mols. at ambient temperature, does not exhibit significant activity for catalytic O2 oxidns. in our evaluations. In contrast, 1-Smoklin is quite active for all these processes. (c) 2000 Academic Press.

CC 59-4 (Air **Pollution** and Industrial Hygiene)

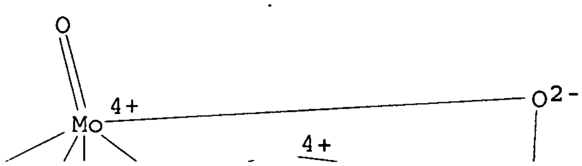
IT **12293-21-9** 148618-33-1, Ambersorb 572 **215595-07-6**
RL: **CAT (Catalyst use)**; USES (Uses)
(**polyoxometallate**-modified fabrics as catalysts for low-temperature aerobic oxidation)

IT **12293-21-9 215595-07-6**
RL: **CAT (Catalyst use)**; USES (Uses)
(**polyoxometallate**-modified fabrics as catalysts for low-temperature aerobic oxidation)

RN 12293-21-9 HCAPLUS

CN Vanadate(5-), (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa
.O':κO':κO'':κO'':κO'':κO''':κO''':.ka
ppa.O''']]di-, pentahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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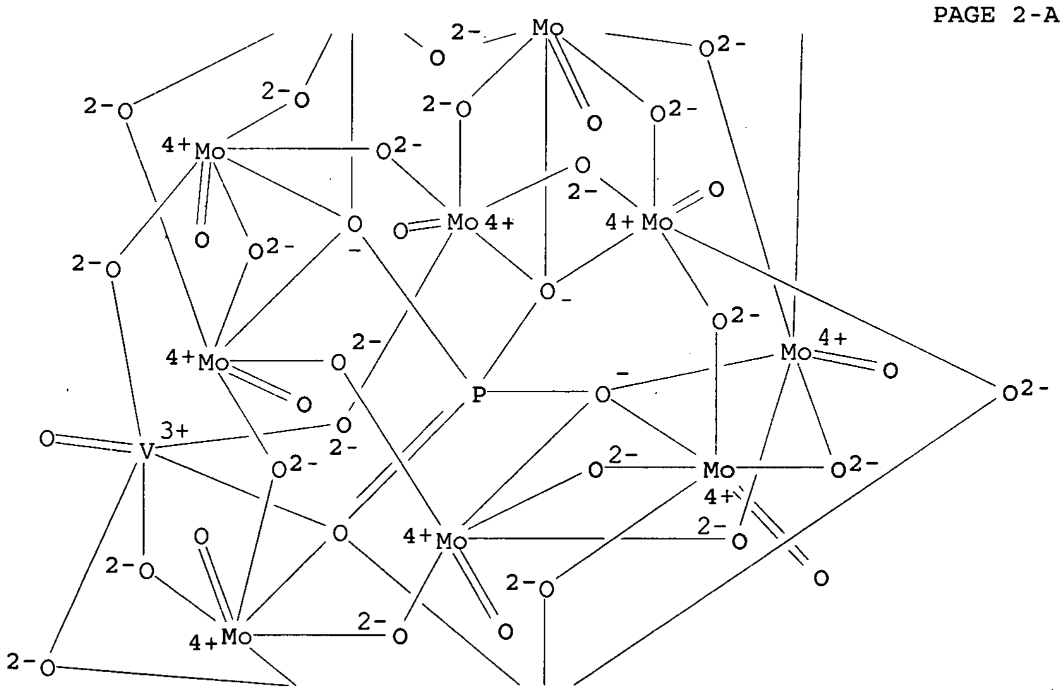

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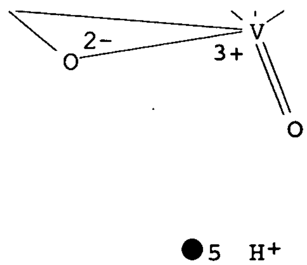
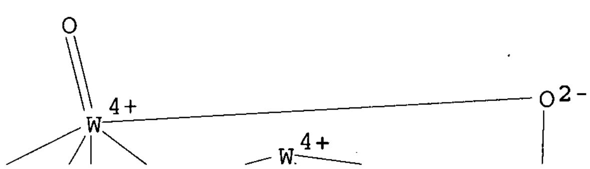


RN 215595-07-6 HCAPLUS
CN Tungstate(8-), dicobaltatetetracosa-μ-oxotetra-μ4-oxoundecaoxoundeca-, octapotassium (9CI) (CA INDEX NAME)

PAGE 1-A



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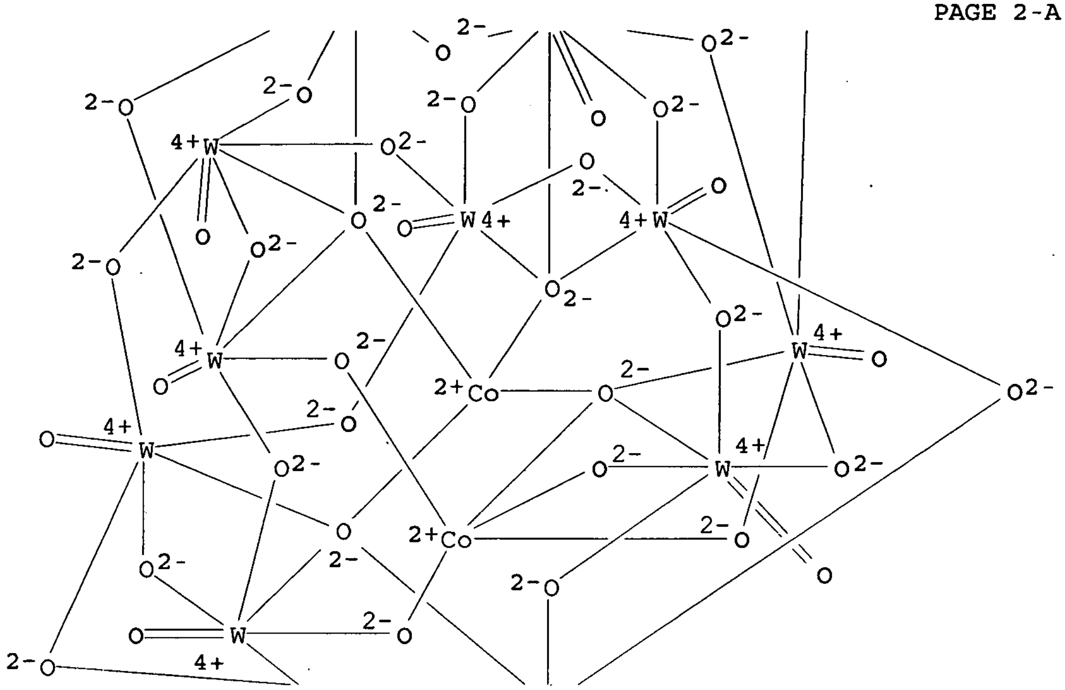

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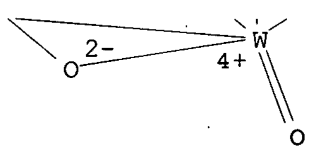


●8 K+

RE.CNT 80 THERE ARE 80 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 46 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:586411 HCAPLUS
DN 133:207485
TI Active components and mechanism of isobutane alkylation with butenes in the catalytic system of HPAs + AcOH
AU Zhao, Zhenbo; Sun, Wendong; Yang, Xiangguang; Ye, Xingkai; Wu, Yue
CS Changchun Institute of Applied Chemistry, The Chinese Academy of Sciences, Changchun, 130022, Peop. Rep. China
SO Wuli Huaxue Xuebao (**2000**), 16(7), 613-620
CODEN: WHXUEU; ISSN: 1000-6818
PB Beijing Daxue Chubanshe
DT Journal
LA Chinese
AB The catalytic active phase (CAP) of a novel liquid catalyst for isobutane

alkylation with butenes was investigated, the **composition** of the CAP was analyzed. The components of the catalytic active phase were separated and examined by the methods of FTIR, UV and NMR. On the basis of these results, a reaction mechanism based on the formation of protonated heteropolyacid as an initial stage in the isobutane alkylation with butenes was postulated, which is in agreement with the exptl. results.

CC 22-4 (Physical Organic Chemistry)
Section cross-reference(s): 45, 51, 67

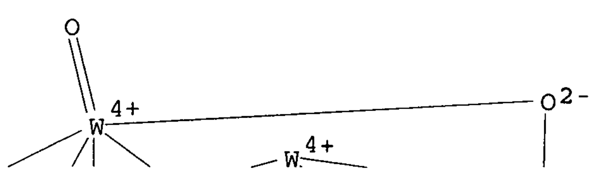
IT **1343-93-7**, 12-Phosphotungstic acid **12027-38-2**
RL: **CAT (Catalyst use)**; USES (Uses)
(active components and mechanism of isobutane alkylation with butenes in the catalytic system of concentrated **heteropolyacid** solution in AcOH)

IT **1343-93-7**, 12-Phosphotungstic acid **12027-38-2**
RL: **CAT (Catalyst use)**; USES (Uses)
(active components and mechanism of isobutane alkylation with butenes in the catalytic system of concentrated **heteropolyacid** solution in AcOH)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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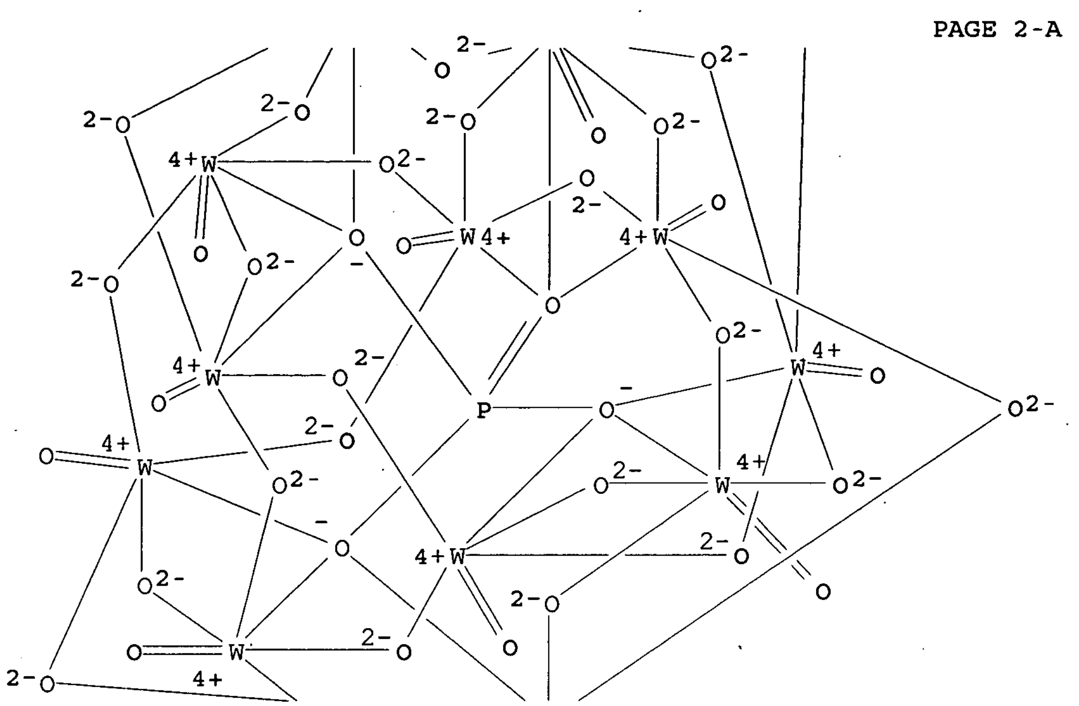

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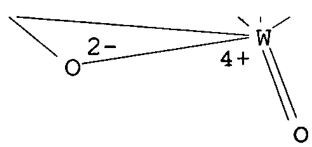
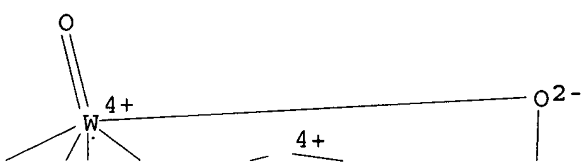


●3 H^+

RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kappa.O':κO':κO':κO'':κO'':κO'':κO''':.kappa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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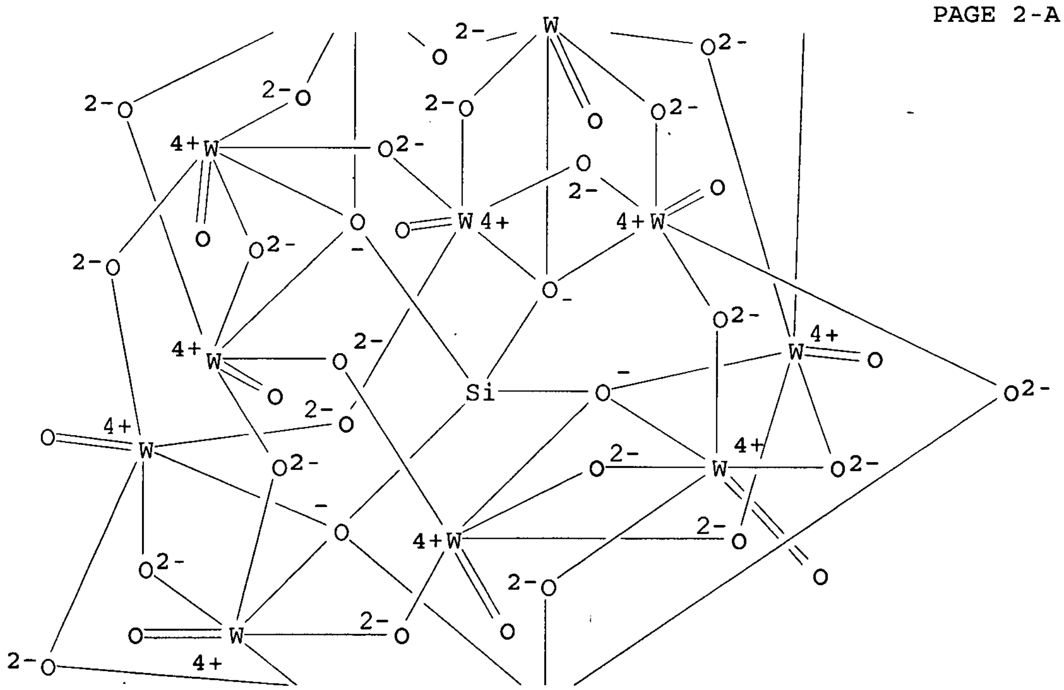

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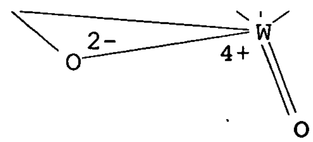

●4 H^+

L32 ANSWER 47 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:553484 HCAPLUS
DN 133:152276
TI Heteropoly acid catalysts supported on silica with low alkali metal content
IN Coker, Eric Nicholas; Howard, Mark Julian; Smith, Warren John
PA BP Chemicals Limited, UK
SO PCT Int. Appl., 22 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000045952	A1	20000810	WO 1999-GB4322	19991217 <--

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RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

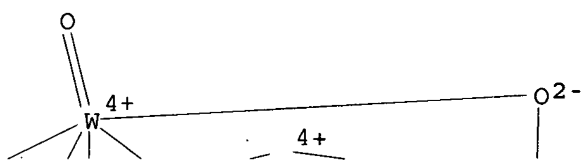
PRAI GB 1999-2676 A 19990206 <--

AB The catalyst **composition** comprises a heteropoly acid or a partial acid salt thereof on a silica support, characterized in that the alkali metal content of the silica support is ≤150 ppm. The alkali metal content of the silica can be reduced by pretreating the support by acid washing. The catalyst can be used in olefin hydration and the preparation of esters from reaction of olefins and carboxylic acids.

IC ICM B01J021-08
ICS B01J027-188; C07C029-04; C07C067-04; B01J037-02
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67
IT 7631-86-9, Silica, uses **12027-38-2**, 12-Tungstosilicic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(**heteropoly** acid catalysts supported on silica with low alkali metal content for preparation of alcs. and esters)
IT **12027-38-2**, 12-Tungstosilicic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(**heteropoly** acid catalysts supported on silica with low alkali metal content for preparation of alcs. and esters)
RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap

pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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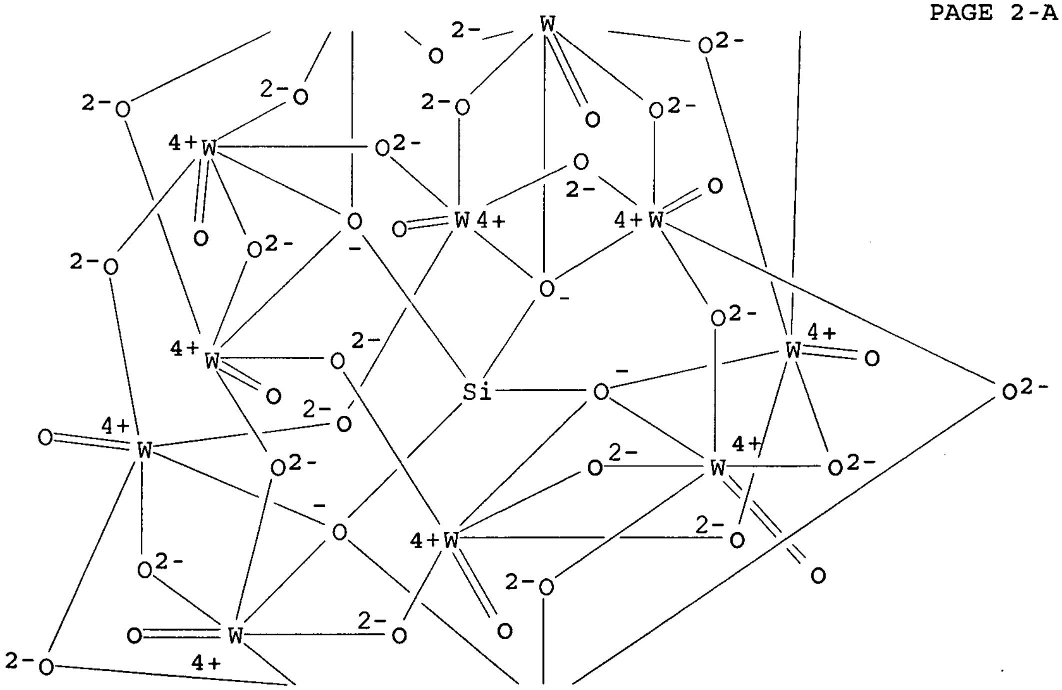

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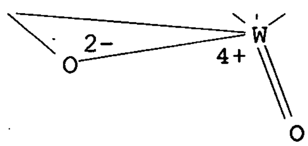

●4 H+

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 48 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:393670 HCAPLUS
DN 133:19148
TI Method for bleaching laundry and household surfaces with polyoxometalates catalyst and air or molecular oxygen
IN Racherla, Uday Shanker; Chen, Qin
PA Unilever Home & Personal Care, USA
SO U.S., 7 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

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PI	US 6074437	A	20000613	US 1999-264191	19990305	<--
	CA 2355954	AA	20000706	CA 1999-2355954	19991129	<--
	WO 2000039264	A1	20000706	WO 1999-EP9330	19991129	<--
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	TR 200101823	T2	20011221	TR 2001-200101823	19991129	<--
	AT 260334	E	20040315	AT 1999-959370	19991129	<--
	ES 2215411	T3	20041001	ES 1999-959370	19991129	<--
	ZA 2001004131	A	20020521	ZA 2001-4131	20010521	<--
PRAI	US 1998-113606P	P	19981223	<--		
	US 1999-264191	A	19990305	<--		
	WO 1999-EP9330	W	19991129	<--		

AB A method for bleaching laundry and household surfaces comprises providing a wash medium with a bleaching **composition** containing a polyoxometalate

as catalyst [e.g., potassium tungstosilicate (K8(SiW11O39))] ; and contacting a stained substrate such as a fabric, kitchenware or a household hard surface with the wash medium for a time and in an amount sufficient to remove the stains, wherein air is employed as primary source of oxygen atom for bleaching.

IC ICM D06L003-02

INCL 008111000

CC 46-5 (Surface Active Agents and Detergents)
Section cross-reference(s): 67

IT **59111-46-5**
RL: **CAT (Catalyst use)**; RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(in catalyst preparation; method for bleaching laundry and household surfaces with **polyoxometalates** catalyst and air or mol. oxygen)

IT **1343-93-7**, Phosphotungstic acid **37300-94-0**
153481-12-0 **273201-40-4** **273201-42-6**
273201-44-8 **273201-45-9** **273201-47-1**
RL: **CAT (Catalyst use)**; USES (Uses)
(method for bleaching laundry and household surfaces with **polyoxometalates** catalyst and air or mol. oxygen)

IT **37300-95-1P**, Potassium tungstosilicate (K8(SiW11O39))
102073-48-3P **174832-28-1P** **261504-16-9P**
RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(method for bleaching laundry and household surfaces with **polyoxometalates** catalyst and air or mol. oxygen)

IT **59111-46-5**
RL: **CAT (Catalyst use)**; RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(in catalyst preparation; method for bleaching laundry and household surfaces with **polyoxometalates** catalyst and air or mol. oxygen)

RN 59111-46-5 HCAPLUS

CN Tungstate(10-), dotriaconta-μ-oxoheneicosaoxo[μ8-[phosphato(3-)-κO:κO:κO':κO':κO'':κO'':κO''':.k
appa.O''']][μ9-[phosphato(3-)-κO:κO:κO:κO':.kap
pa.O':κO'':κO'':κO''':κO''']]heptadeca-,
decapotassium (9CI) (CA INDEX NAME)

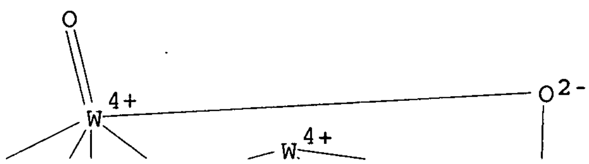
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **1343-93-7**, Phosphotungstic acid **37300-94-0**
153481-12-0 **273201-40-4** **273201-42-6**
273201-45-9 **273201-47-1**
RL: **CAT (Catalyst use)**; USES (Uses)
(method for bleaching laundry and household surfaces with **polyoxometalates** catalyst and air or mol. oxygen)

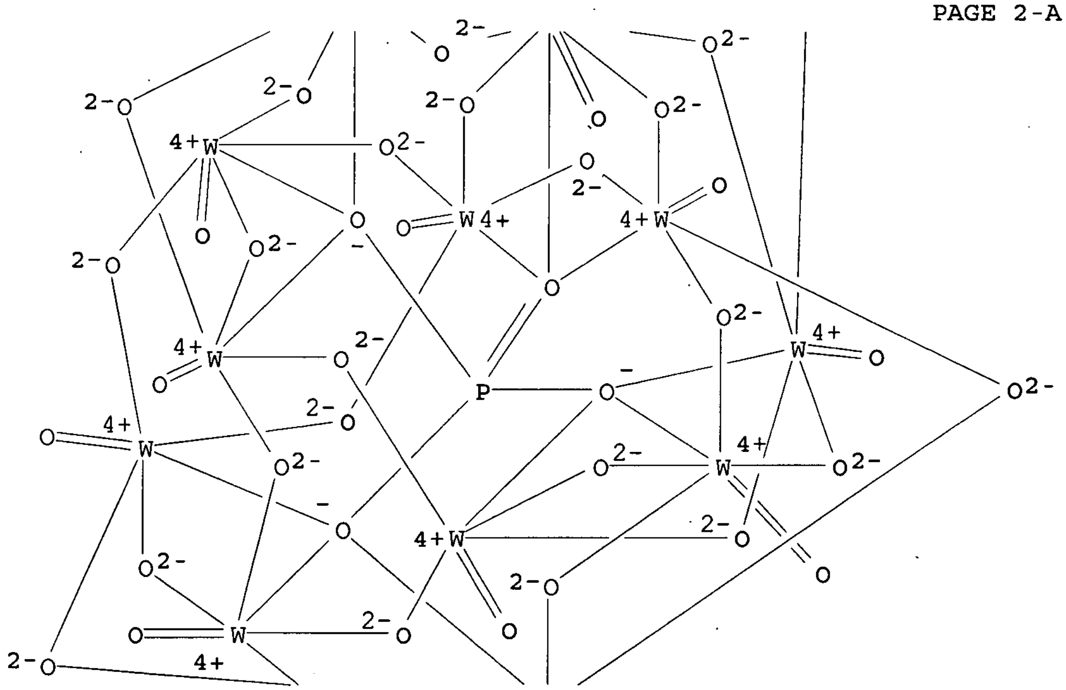
RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



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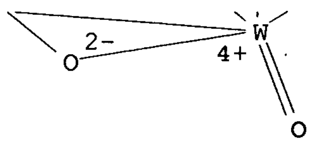
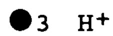
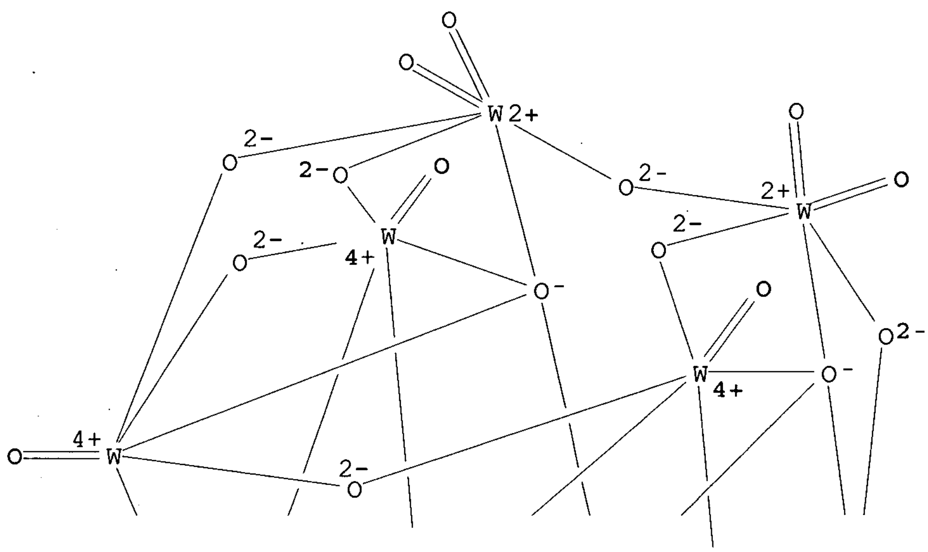




RN 37300-94-0 HCAPLUS
CN Tungstate(7-), eicosa-μ-oxopentadecaoxo[μ11-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''']]undeca-, heptapotassium (9CI) (CA INDEX NAME)

PAGE 1-A



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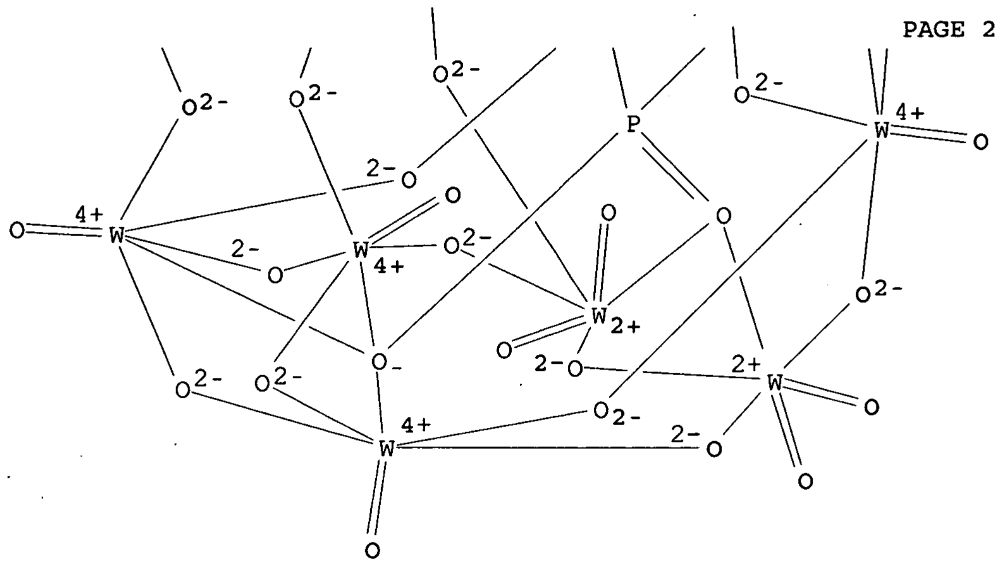


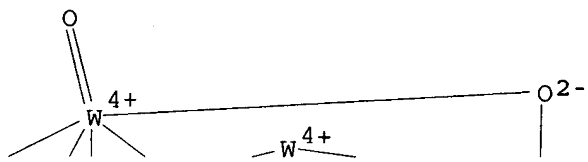
PAGE 3-A

● 7 K^+

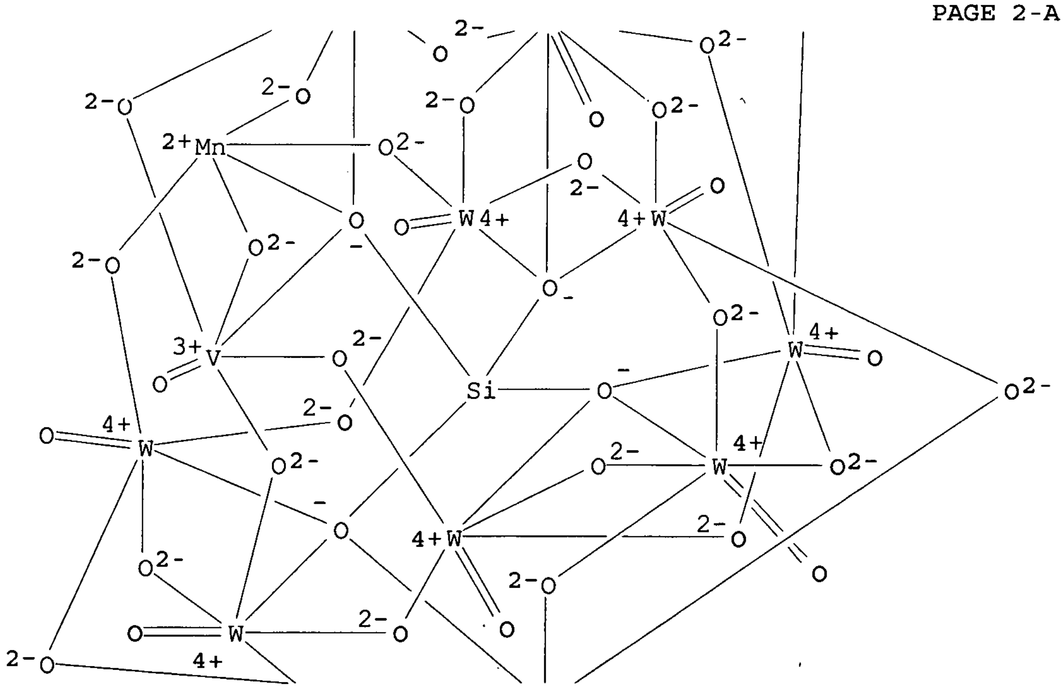
RN 153481-12-0 HCAPLUS
CN Niobate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':κO''']]tetra-μ-oxoperoxy-, pentapotassium (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 273201-40-4 HCAPLUS
CN Vanadate(7-), (heptadeca-μ-oxodecaoxodecatungstate)manganate[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':κO''']]hepta-μ-oxooxo-, heptapotassium (9CI) (CA INDEX NAME)

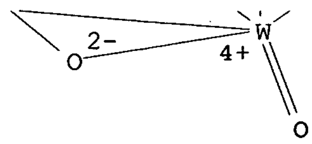
PAGE 1-A



PAGE 2-A



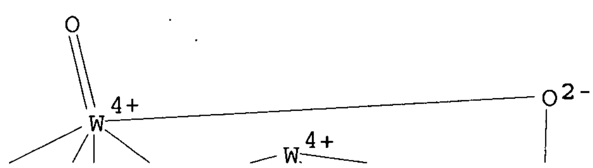
PAGE 3-A



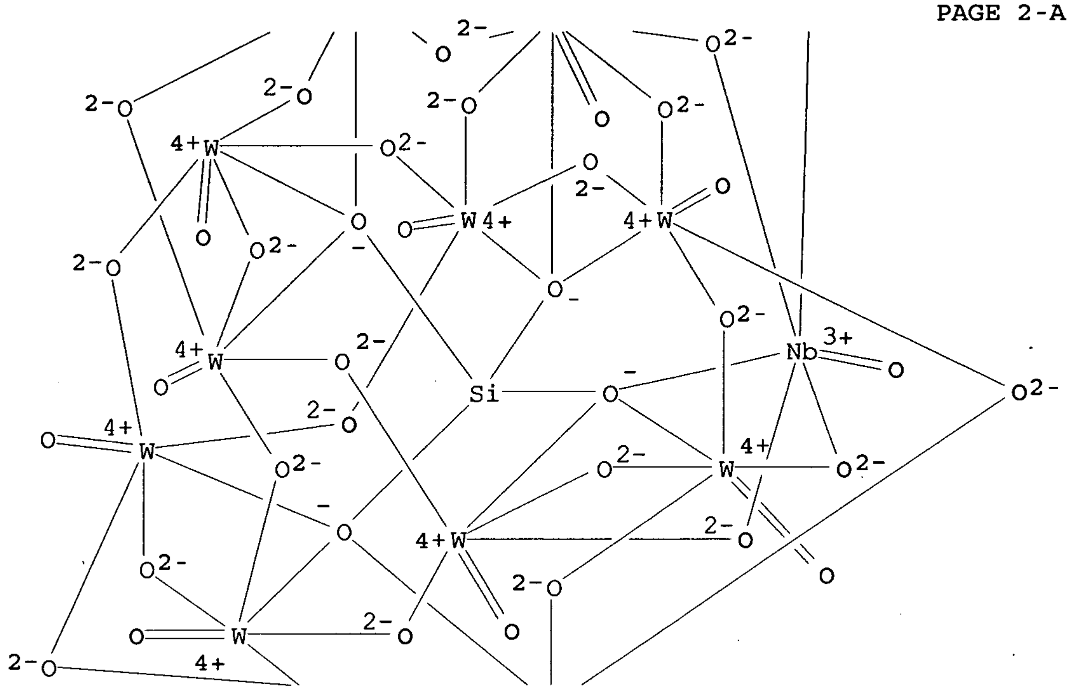
● 7 K^+

RN 273201-42-6 HCAPLUS
CN Niobate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':κO''']]tetra-μ-oxooxo-, pentacesium (9CI) (CA INDEX NAME)

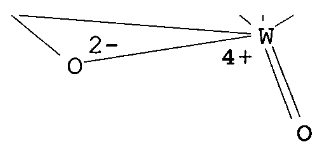
PAGE 1-A



PAGE 2-A



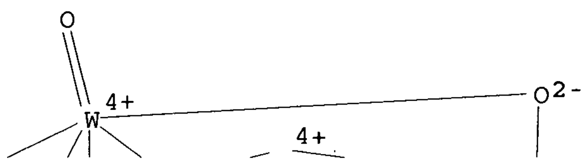
PAGE 3-A



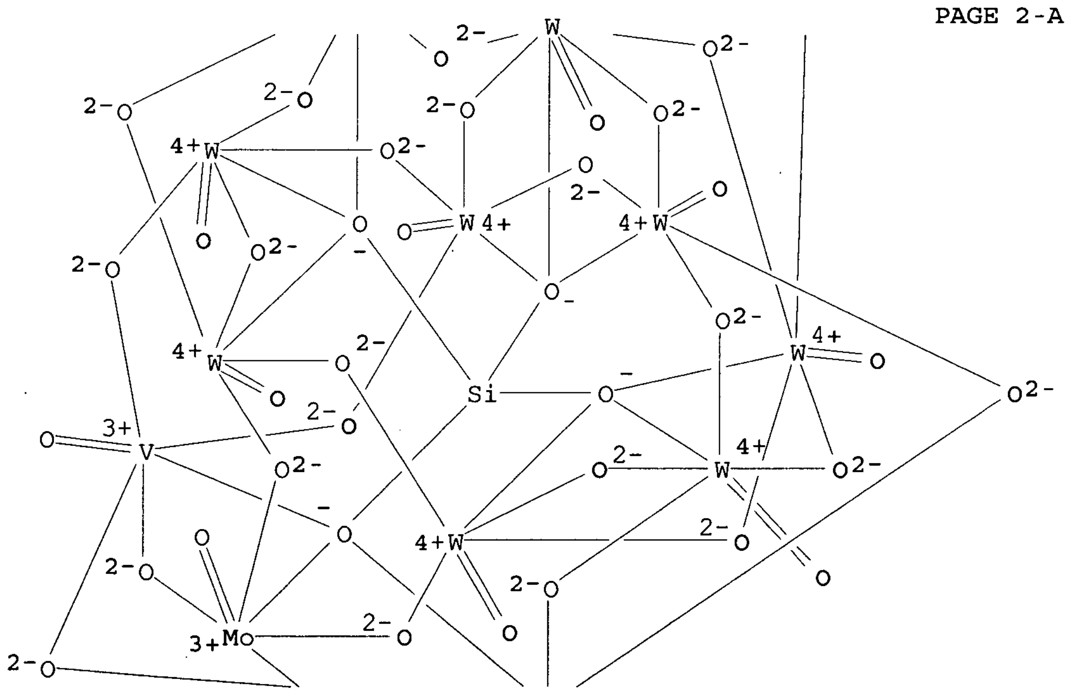
● 5 Cs^+

RN 273201-45-9 HCAPLUS
CN Vanadate(7-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kappa
.O':κO':κO':κO'':κO'':κO'':κO''':.kapp
a.O''':κO''']]octa-μ-oxooxo(μ-oxodioxodimolybdate)(pentadeca-
μ-oxononaoxononatungstate)-, heptapotassium (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



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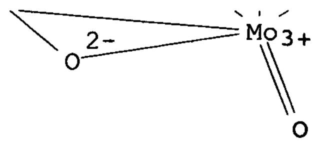
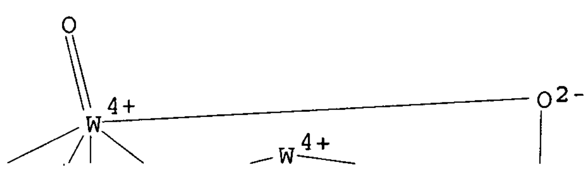


● 7 K^+

RN 273201-47-1 HCAPLUS
CN Vanadate(7-), cobaltate(heptadeca-μ-oxodecaoxodecatungstate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':κO''']]hepta-μ-oxooxo-, heptapotassium (9CI) (CA INDEX NAME)

PAGE 1-A



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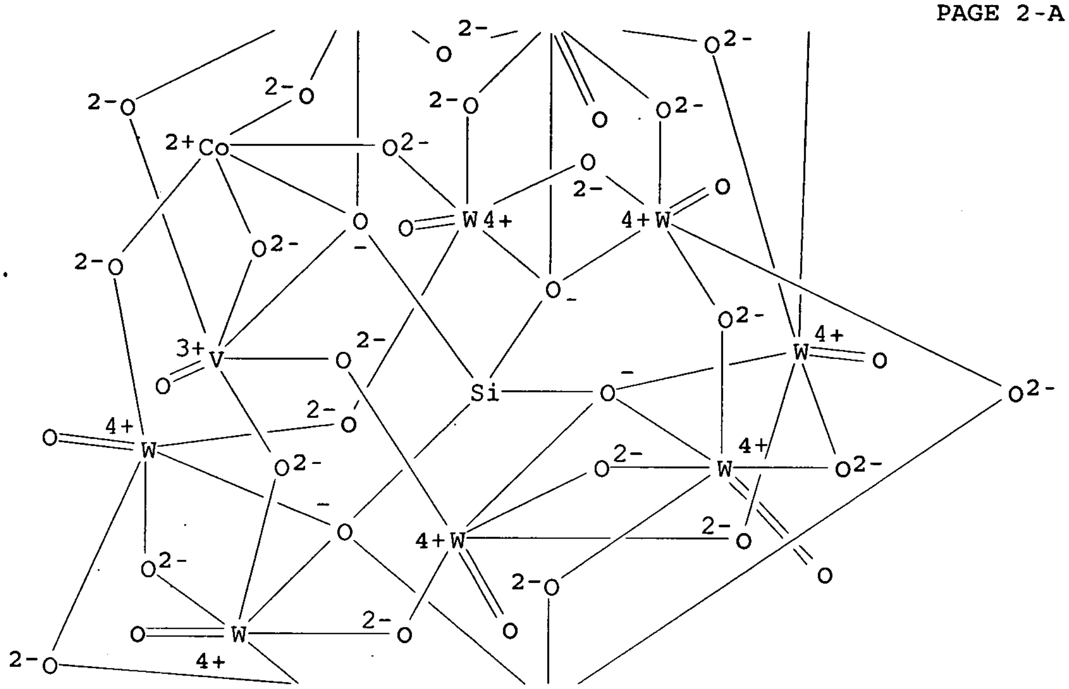

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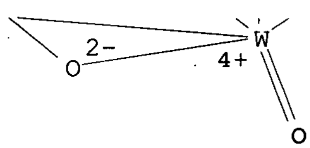


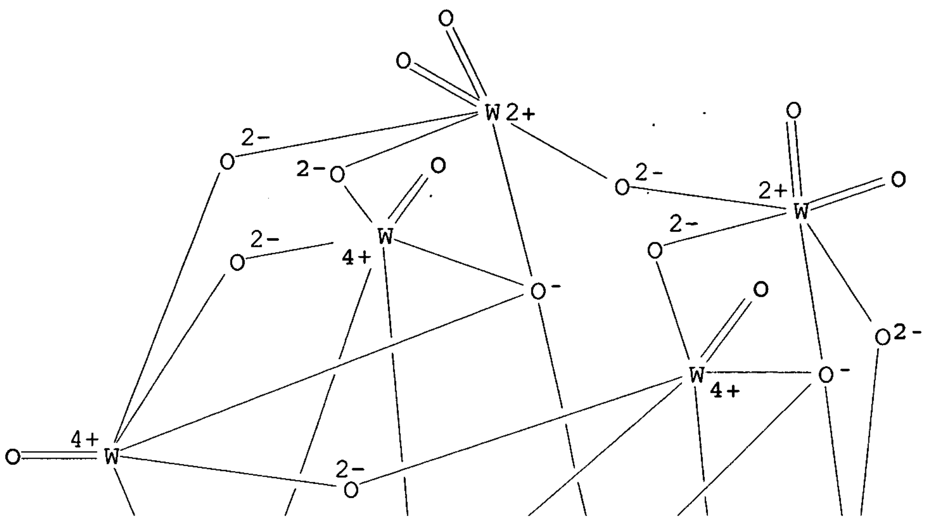
●7 K^+

IT 37300-95-1P, Potassium tungstosilicate (K8(SiW11O39))
102073-48-3P 174832-28-1P 261504-16-9P
RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(method for bleaching laundry and household surfaces with **polyoxometalates** catalyst and air or mol. oxygen)

RN 37300-95-1 HCAPLUS

CN Tungstate(8-), [μ11-[orthosilicato(4-)-κO:κO:κO:.kapp a.O':κO':κO':κO'':κO'':κO'':κO''':.kap pa.O''']]eicosa-μ-oxopentadecaoxoundeca-, octapotassium (9CI) (CA INDEX NAME)

PAGE 1-A



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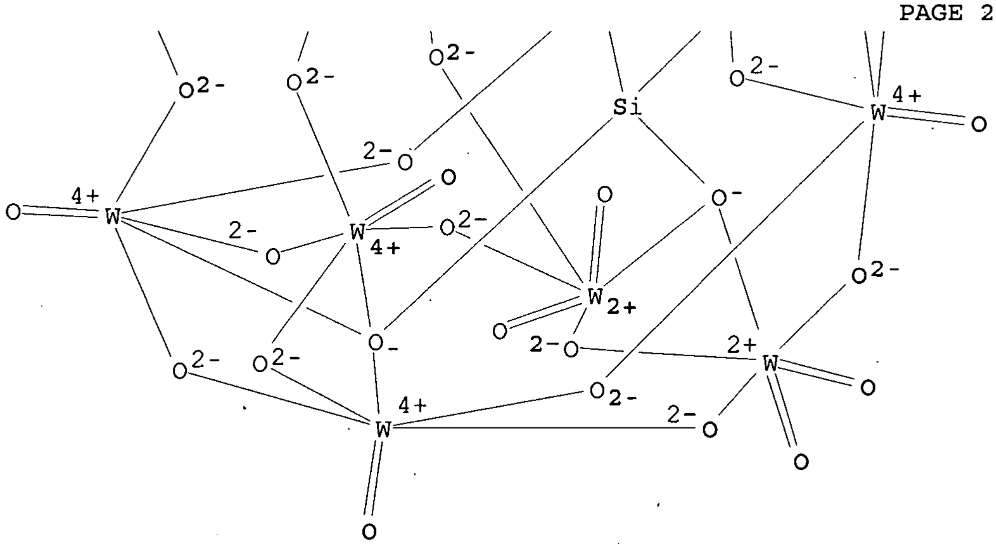


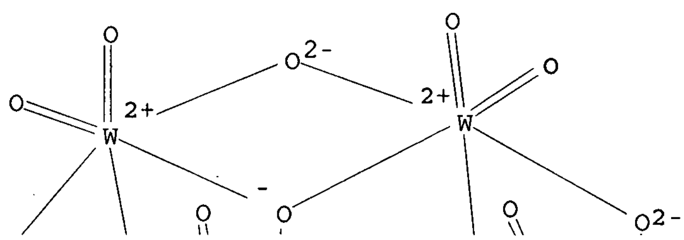
PAGE 3-A

● 8 K^+

RN 102073-48-3 HCAPLUS

CN Tungstate(8-), [μ10-[orthosilicato(4-)-κO:κO:κO:.kapp a.O':κO':κO':κO'':κO'':κO''':κO''']]octadeca-μ-oxotetradecaoxodeca-, octapotassium (9CI) (CA INDEX NAME)

PAGE 1-A



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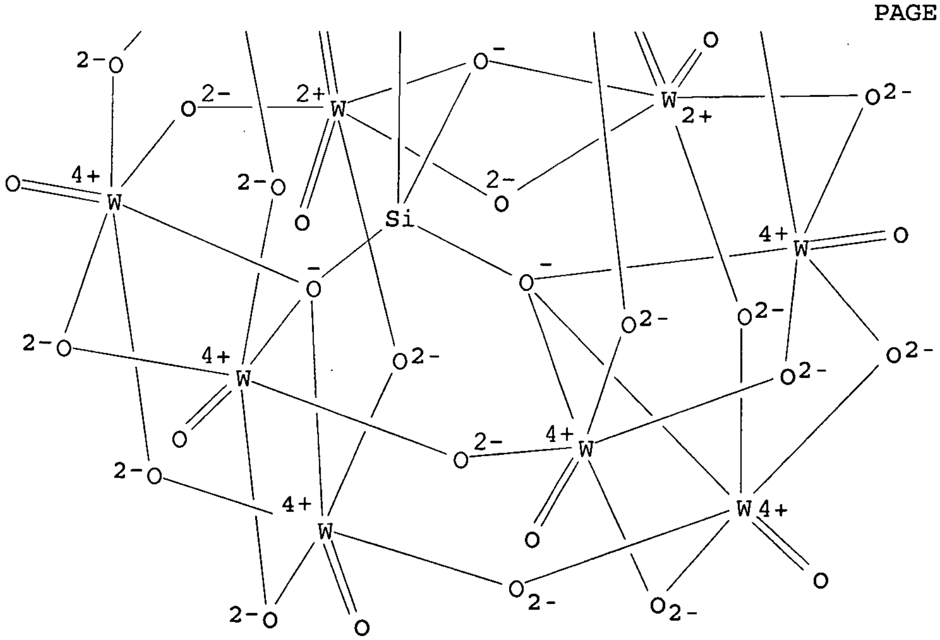
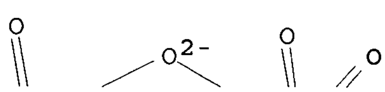


PAGE 3-A

● 8 K^+

RN 174832-28-1 HCAPLUS
CN Tungstate(10-), [μ9-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO'':κO'':κO''':κO''']]pentadeca-
μ-oxopentadecaoxonona-, decasodium (9CI) (CA INDEX NAME)

PAGE 1-A



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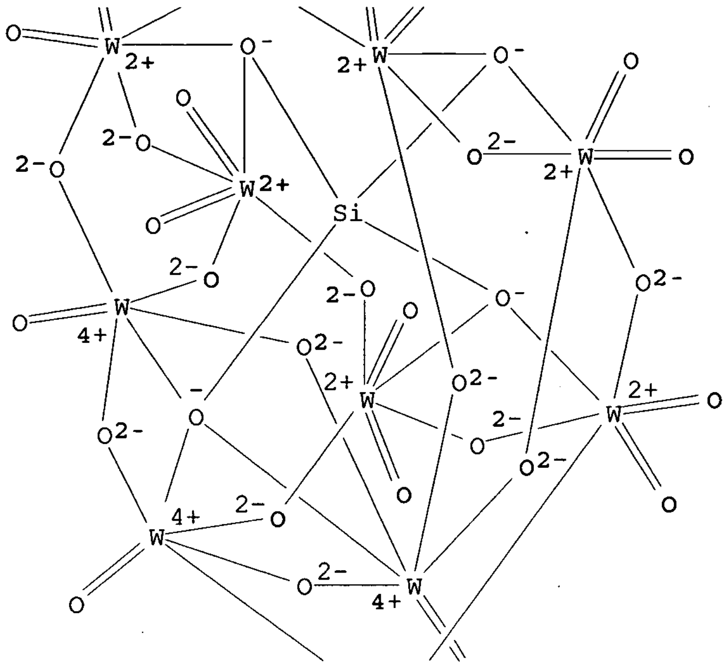

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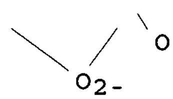
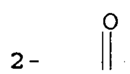


●10 Na^+

RN 261504-16-9 HCAPLUS
CN Tungstate(8-), (aquacuprate)hexatriaconta-μ-oxoheptadecaoxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':.kappa.O'':κO''':κO''']]heptadeca-, octapotassium (9CI) (CA INDEX NAME)

PAGE 1-A



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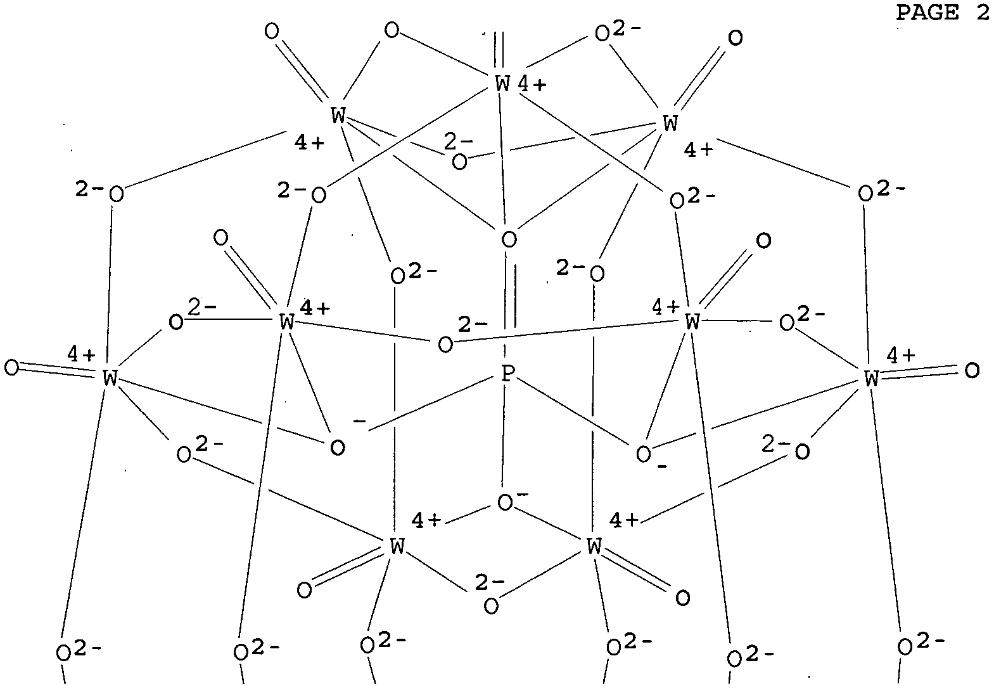

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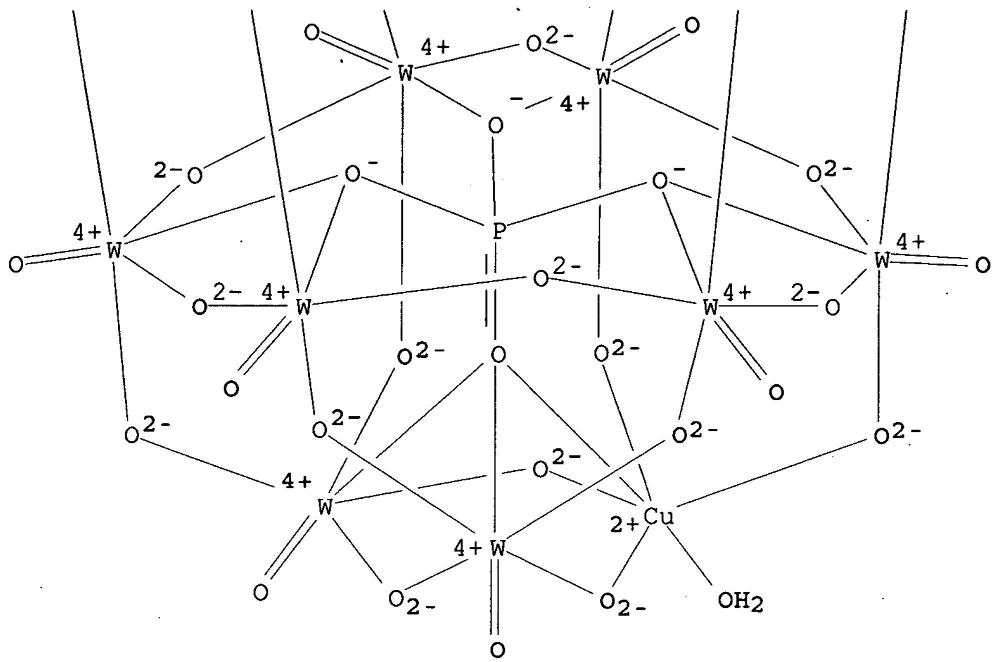

PAGE 4-A

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L32  ANSWER 49 OF 70  HCAPLUS  COPYRIGHT 2006 ACS on STN
AN   2000:271960  HCAPLUS
DN   132:264885
TI   The use of heteropolyacids as catalysts in the synthesis of ketone
     peroxides
IN   Frenkel, Peter; Nwoko, Delphine; Pettijohn, Ted M.
PA   Witco Corporation, USA
SO   U.S., 3 pp.
     CODEN: USXXAM
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND    DATE        APPLICATION NO.        DATE
     ---------------     ----    --------    --------------------   --------
PI   US 6054625           A      20000425    US 1999-321287         19990527 <--
     WO 2000073267        A1     20001207    WO 2000-US14559        20000525 <--
     WO 2000073267        C2     20020620
         W:  AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU,
             CZ, DE, DK, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL,
             IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD,
             MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK,
             SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG,
             KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
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DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRAI US 1999-321287 A 19990527 <--

OS CASREACT 132:264885

AB Geminal dihydroperoxyalkyl peroxides and 1,1-dihydroperoxydialkyl peroxides are prepared in high yield and selectivity by reacting an aqueous **composition** comprising a ketone (e.g., 2-butanone) with hydrogen peroxide in the presence of a heteropolyacid (e.g., phosphotungstic acid).

IC ICM C07C409-00

INCL 568564000

CC 23-10 (Aliphatic Compounds)
Section cross-reference(s): 45, 67

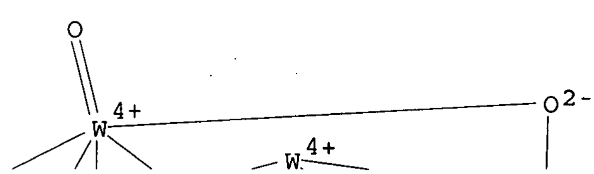
IT **1343-93-7**, Phosphotungstic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(use of **heteropolyacids** as catalysts in the synthesis of ketone peroxides)

IT **1343-93-7**, Phosphotungstic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(use of **heteropolyacids** as catalysts in the synthesis of ketone peroxides)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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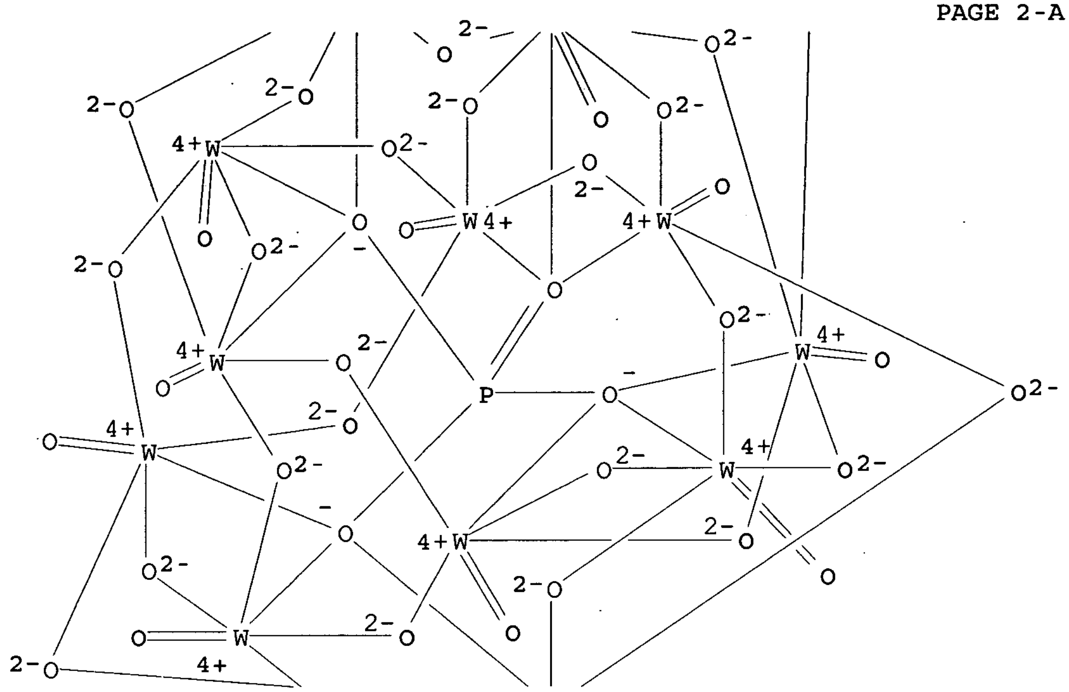
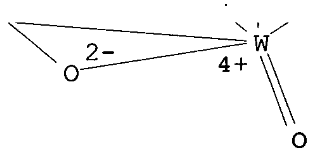


PAGE 3-A



●3 H^+

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 50 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:234613 HCAPLUS
DN 133:209614
TI Alkylation of benzene with long chain olefins over heteropoly acid H3PW12O40(PW)/MCM-41 catalysts
AU Deng, Wei; Jin, Yingjie; Ren, Jie
CS Department of Petrochemical Technology, Fushun Petroleum Institute, Liaoning Fushun, 113001, Peop. Rep. China
SO Fushun Shiyou Xueyuan Xuebao (**2000**), 20(1), 38-42
CODEN: FSXEE8; ISSN: 1005-3883
PB Fushun Shiyou Xueyuan Xuebao Bianjibu
DT Journal
LA Chinese
AB New solid acid catalysts, consisting of heteropoly acid H3PW12O40(PW) and

supported on a meso-porous mol. sieve MCM-41, were prepared, and characterized by x-ray diffraction, ammonia temperature programmed desorption, and nitrogen physisorption techniques. For the alkylation of benzene with 1-dodecene, the PW/MCM-41 **composition** with various PW loads was investigated and compared with HY zeolite on the effect of the **composition**, acidity, and pore structure on their catalytic performance. The PW/MCM-41 catalysts with PW load of 10% .apprx. 50%(weight) had stronger acidity and size-uniformed meso-pores because MCM-41 frameworks was mostly maintained and the heteropoly acid dispersed uniformly on the MCM-41 surface. The alkylation of the PW/MCM-41 compns. can be effectively controlled by controlling PW loads and pretreating temperature Compared to HY zeolite, the typical meso-porous catalyst with PW loads of 50 weight% exhibits not only much higher catalytic activity, stability and selectivity towards linear alkylbenzenes but also reasonable isomer distributions of Ph dodecane than that of HY zeolite in the alkylation reaction.

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

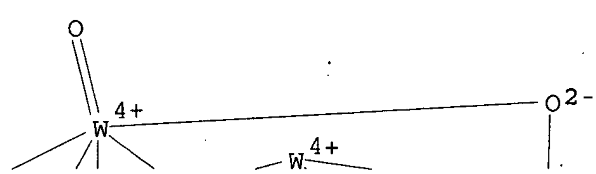
IT **1343-93-7**
RL: **CAT (Catalyst use)**; USES (Uses)
(desorption of ammonia by **heteropoly** acid H3PW12O40(PW)/MCM-41 catalysts)

IT **1343-93-7**
RL: **CAT (Catalyst use)**; USES (Uses)
(desorption of ammonia by **heteropoly** acid H3PW12O40(PW)/MCM-41 catalysts)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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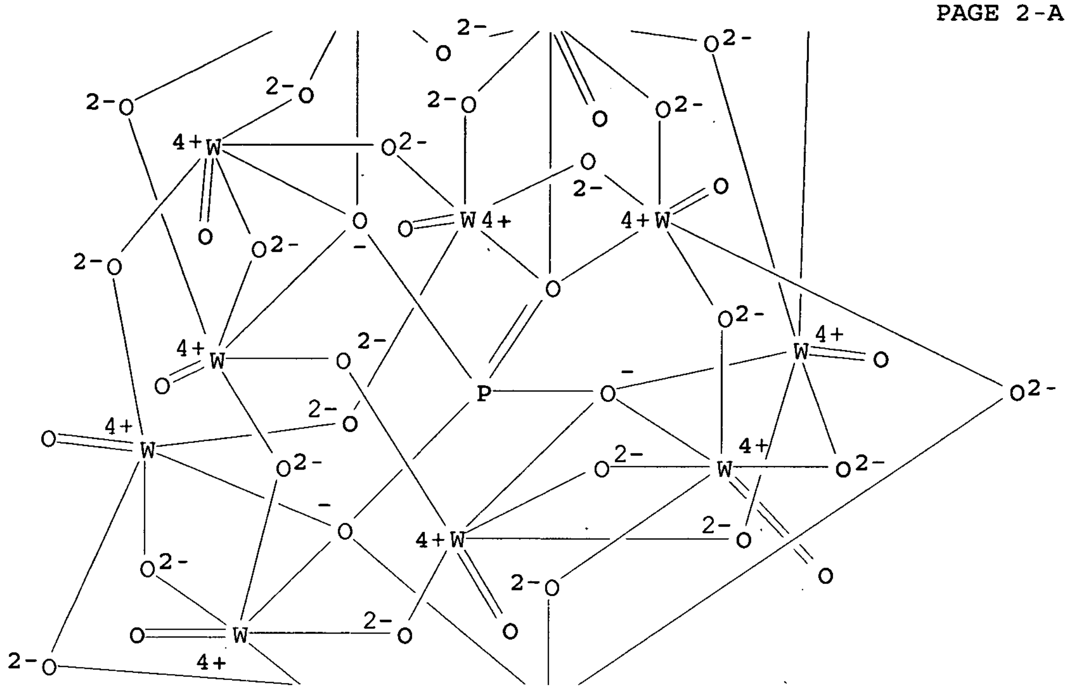

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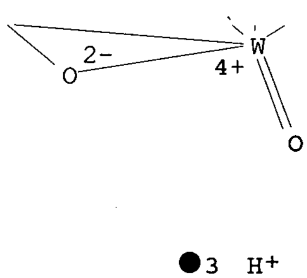

L32 ANSWER 51 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:425517 HCAPLUS
DN 131:47008
TI Heteropoly salts or acid salts deposited in the interior of porous supports
IN Soled, Stuart Leon; Paes, Jose Agustoda Costa; Gutierrez, Antonio; Miseo, Sabato; Gates, William E.; Riley, Kenneth L.
PA Exxon Research and Engineering Co., USA
SO U.S., 12 pp., Cont.-in-part of U.S. Ser. No. 156,178, abandoned. CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

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PI   US 5919725          A     19990706   US 1998-100596        19980619 <--
     US 5866739          A     19990202   US 1997-902047        19970729 <--
PRAI US 1993-156178      B2    19931119  <--
     US 1994-336364      B3    19941108  <--
     US 1995-488665      B1    19950608  <--
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AB The present invention relates to a catalyst **composition**, its methods of preparation and its use in aromatic alkylation processes. The **composition** comprises a heteropoly compound selected from the group consisting of heteropoly salts and heteropoly acid salts deposited in the interior of a porous support selected from the group consisting of silica, titania, and zirconia, wherein the salt of the heteropoly salt and the heteropoly acid salt is selected from the group consisting of ammonium, cesium, potassium, and rubidium salts and mixts. thereof, and wherein the heteropoly salt and the heteropoly acid salt are formed with a heteropoly acid selected from the group consisting of 12-tungstophosphoric, 12-tungstosilicic, 12-molybdophosphoric, and 12-molybdosilicic acid.

IC ICM B01J027-18
ICS B01J027-188

INCL 502210000

CC 51-11 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 35, 45, 67

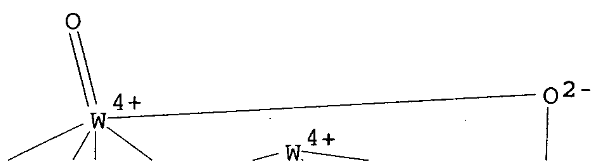
IT **1343-93-7**, 12-Tungstophosphoric acid **12026-57-2**, 12-Molybdophosphoric acid **12027-12-2**, 12-Molybdosilicic acid **12027-38-2**, 12-Tungstosilicic acid
RL: **CAT (Catalyst use)**; RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(**heteropoly** salts or acid salts deposited in interior of porous supports)

IT **1343-93-7**, 12-Tungstophosphoric acid **12026-57-2**, 12-Molybdophosphoric acid **12027-12-2**, 12-Molybdosilicic acid **12027-38-2**, 12-Tungstosilicic acid
RL: **CAT (Catalyst use)**; RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(**heteropoly** salts or acid salts deposited in interior of porous supports)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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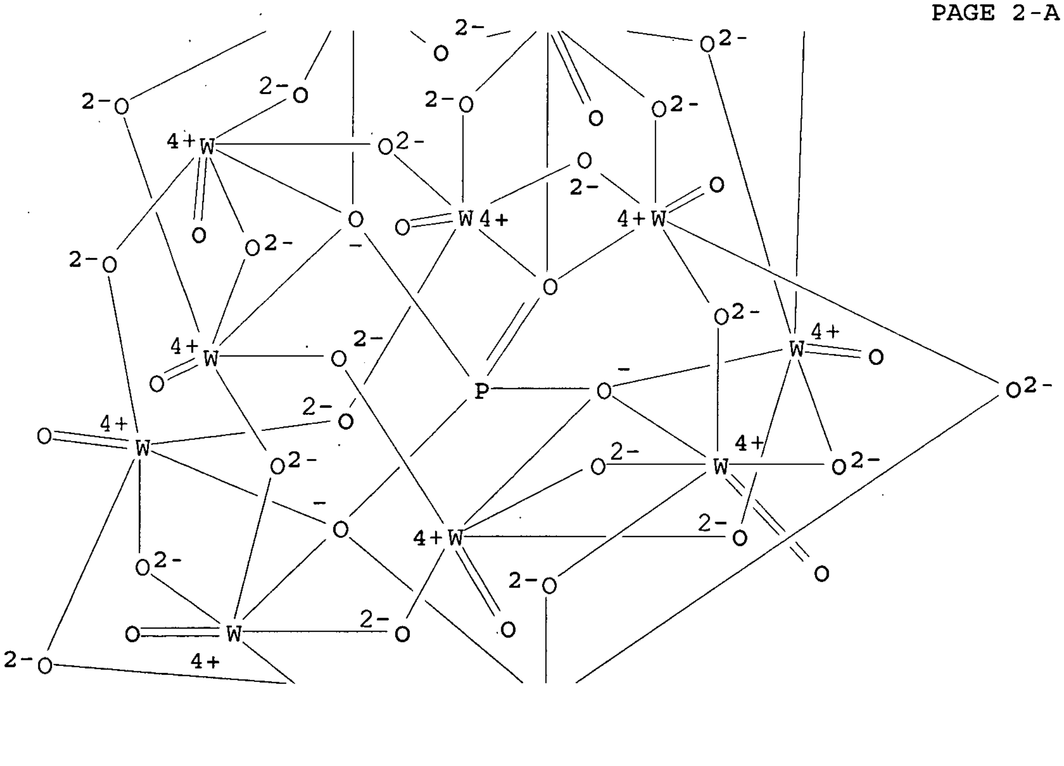

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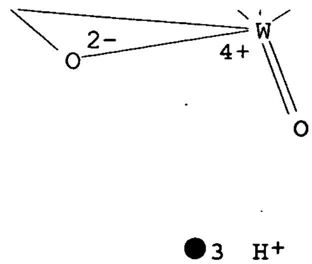
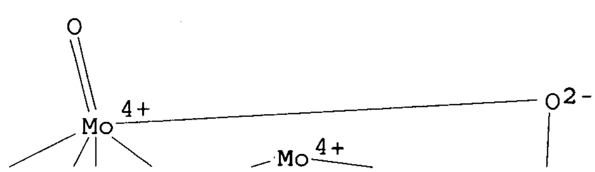


RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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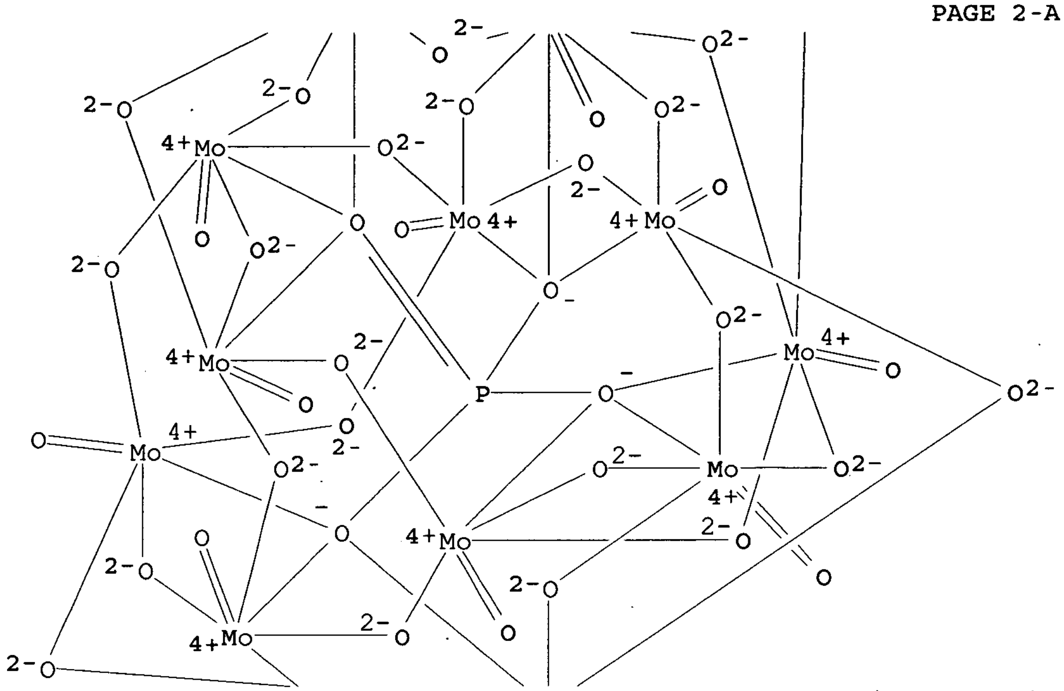

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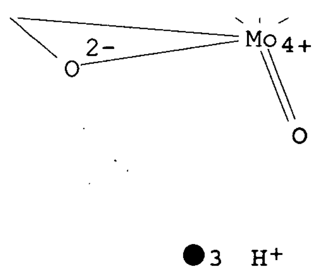
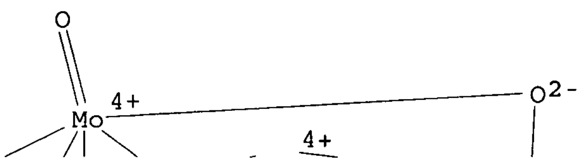


RN 12027-12-2 HCAPLUS
CN Molybdate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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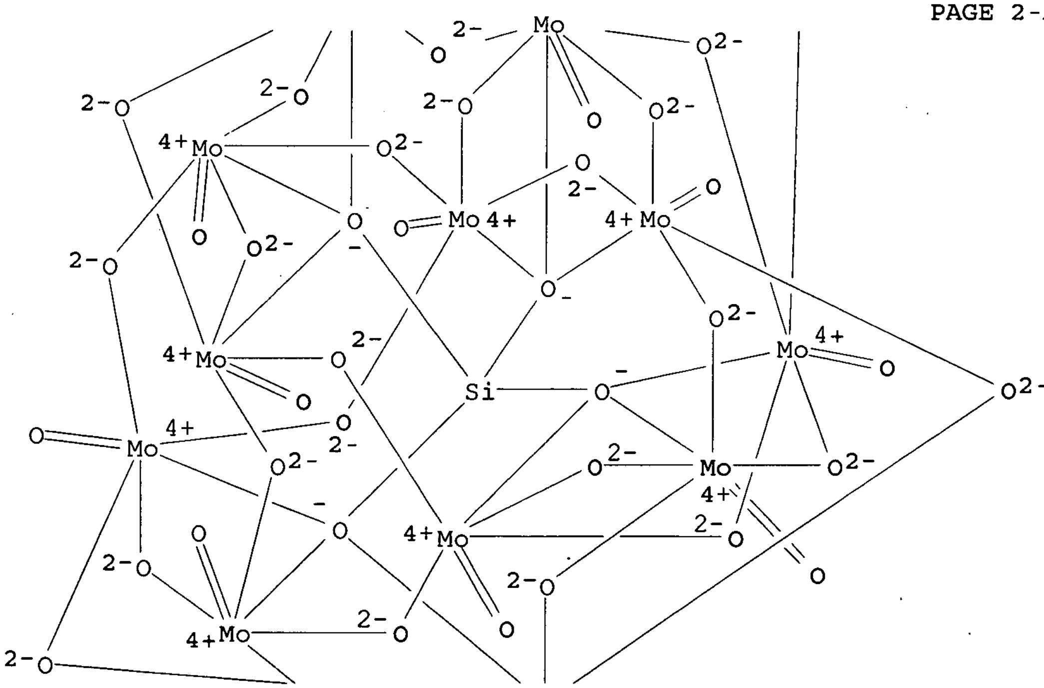

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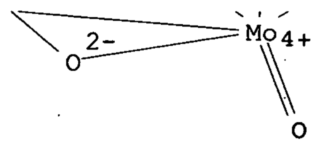
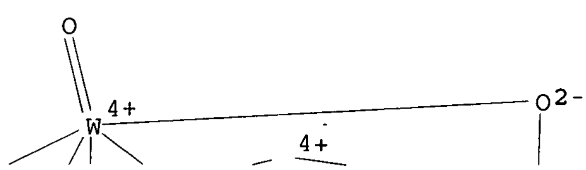


● 4 H^+

RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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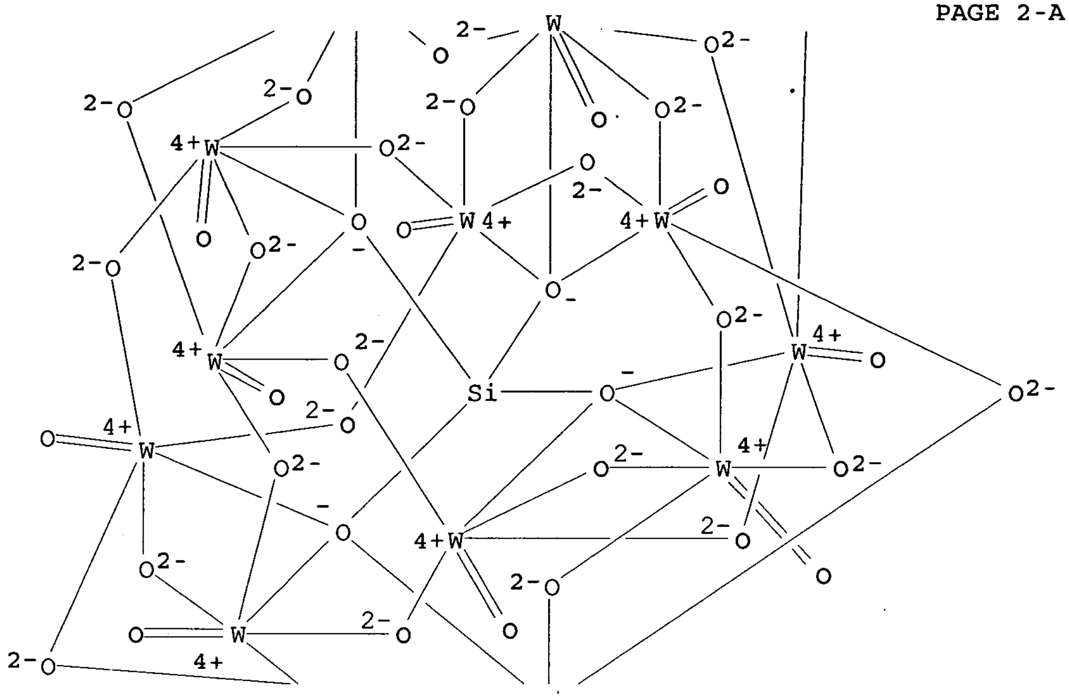
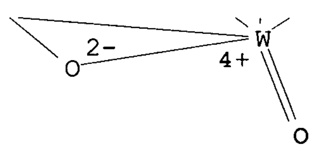


PAGE 3-A



●4 H+

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 52 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:375636 HCAPLUS
DN 131:20590
TI Polyoxometalate bleach catalysts in cleaning and detergent **compositions**
IN Greenhill-Hooper, Michael John; Rey-Garcia, Fernando; Corma-Canos, Avelino; Jorda-Moret, Jose Luis
PA U.S. Borax Inc., USA
SO PCT Int. Appl., 41 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI	WO 9928426	A1	19990610	WO 1998-GB3618	19981203 <--

W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

	ZA 9811059	A	19990603	ZA 1998-11059	19981203 <--
	CA 2312901	AA	19990610	CA 1998-2312901	19981203 <--
	AU 9913457	A1	19990616	AU 1999-13457	19981203 <--
	EP 1036154	A1	20000920	EP 1998-957033	19981203 <--

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	BR 9815343	A	20001024	BR 1998-15343	19981203 <--
	JP 2001525451	T2	20011211	JP 2000-523306	19981203 <--
	US 6326342	B1	20011204	US 2000-555696	20000822 <--
PRAI	GB 1997-25614	A	19971203 <--		
	WO 1998-GB3618	W	19981203 <--		

AB A bleaching **composition** comprises (i) a bleaching agent such as peroxide, and (ii) bleach catalyst, a polyoxometalate of Keggin, Dawson or Finke structure (A')a'(Cox'Yy',Mm',Oo).cH2O, where A' = cation; a' has a value such that (A')a' counters the anionic charge of (Cox', Yy', Mm', Oo); x' = 0.25-4; Y = P, Si or Co; y' = 1 or 2; o = 34-68; M = W, Mo, V, Nb or Ta; m' = 9-18; and c = 0-84. The bleaching compns. according to the invention have good bleaching performance and can be used with or without a bleach activator, e.g. at low temps. Catalyst K6[Si(Co.H2O)W11O39] was prepared

IC ICM C11D003-39
ICS C11D003-395

CC 46-5 (Surface Active Agents and Detergents)
Section cross-reference(s): 67

IT **39292-26-7P** **105785-76-0P** 226422-93-1P 226422-94-2P **226422-95-3P** 226422-96-4P **226422-97-5P** **226422-98-6P** **226422-99-7P** **226423-00-3P**
RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(bleach catalyst; bleaching compns. containing cobalt **polyoxometalate** bleach catalyst in laundering fabrics)

IT **39292-26-7P** **105785-76-0P** **226422-95-3P** **226422-97-5P** **226422-98-6P** **226422-99-7P** **226423-00-3P**
RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(bleach catalyst; bleaching compns. containing cobalt **polyoxometalate** bleach catalyst in laundering fabrics)

RN 39292-26-7 HCAPLUS

CN Methanaminium, N,N,N-trimethyl-, (aquacobaltate)tetracosa-μ-oxoundecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':κO''']]undecatungstate(5-) (5:1) (9CI) (CA INDEX NAME)

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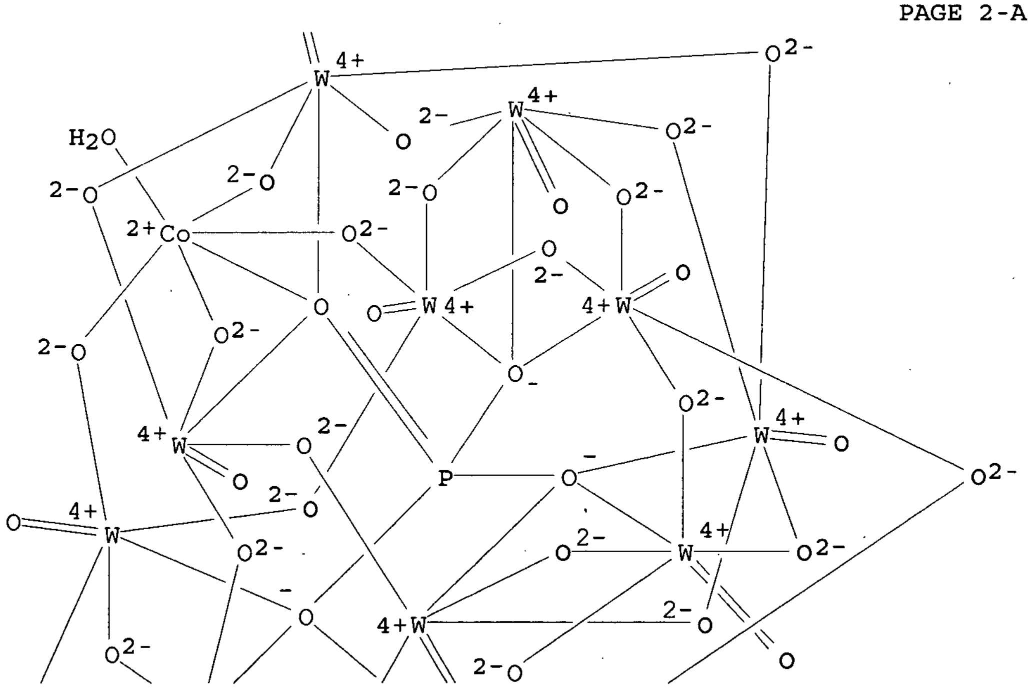
CRN 66258-00-2
CMF Co H2 O40 P W11
CCI CCS

PAGE 1-A

PAGE 2-A



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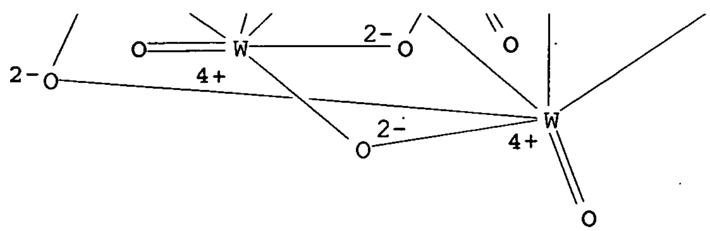
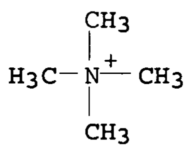


CM 2

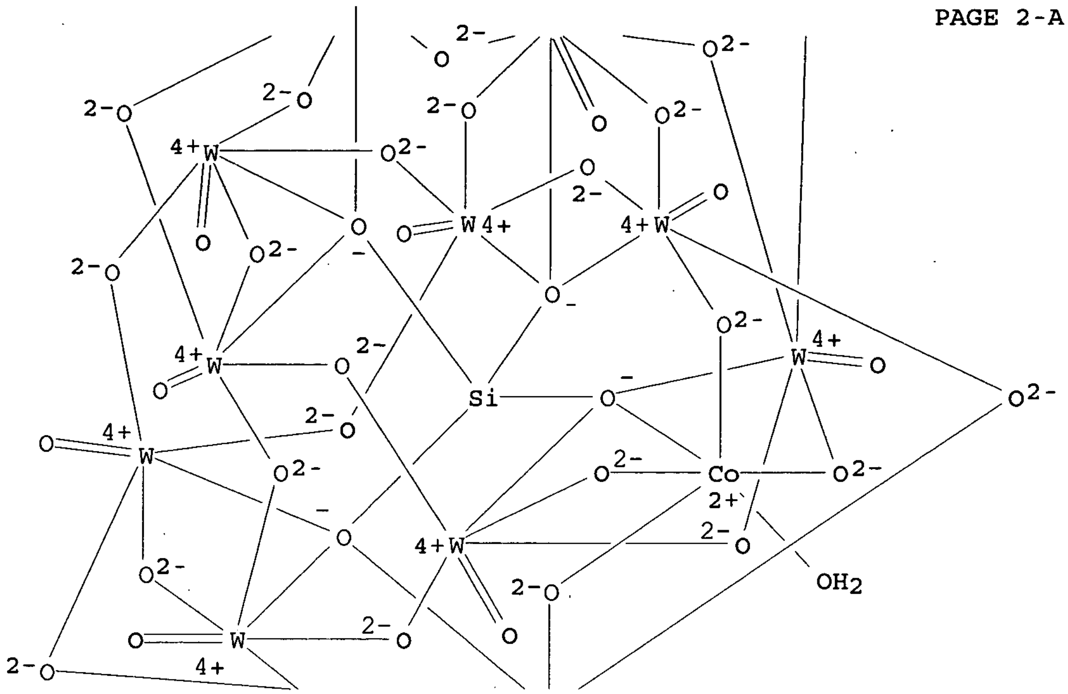
CRN 51-92-3
CMF C4 H12 N



RN 105785-76-0 HCAPLUS
CN Tungstate(6-), (aquacobaltate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tetracosa-μ-oxoundecaoxoundeca-, hexapotassium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



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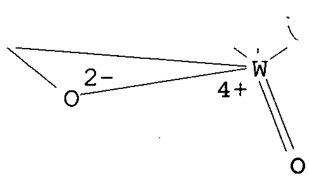
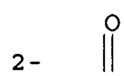


● 6 K^+

RN 226422-95-3 HCAPLUS

CN Tungstate(10-), bis(aquacobaltate)hexatriaconta-μ-oxohexadecaoxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':κO'':κO''':κO''']]hexadeca-, decapotassium (9CI) (CA INDEX NAME)

PAGE 1-A



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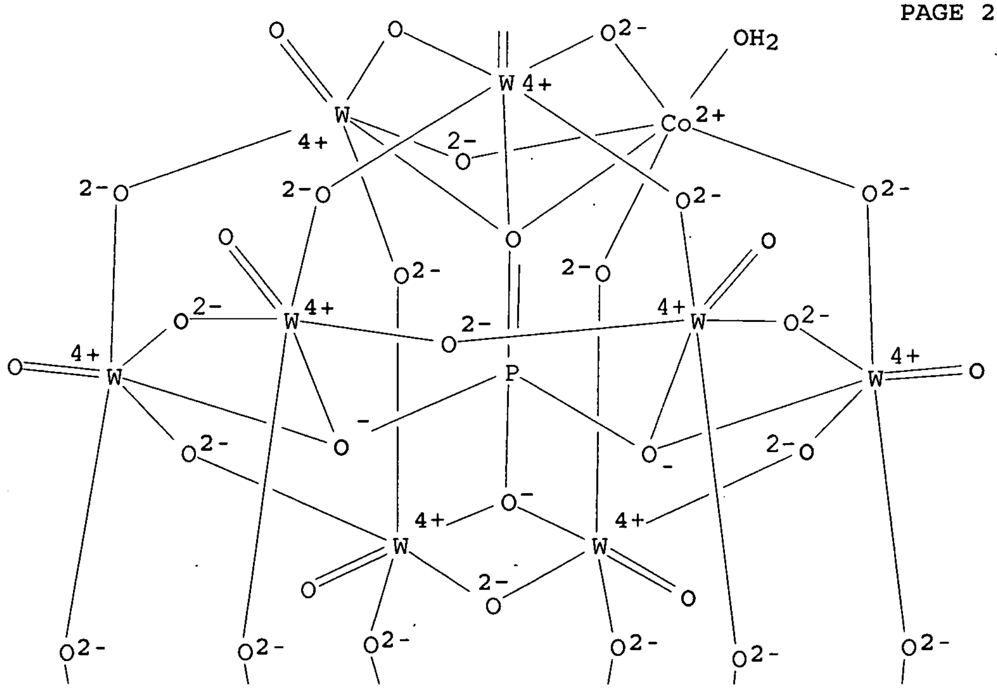

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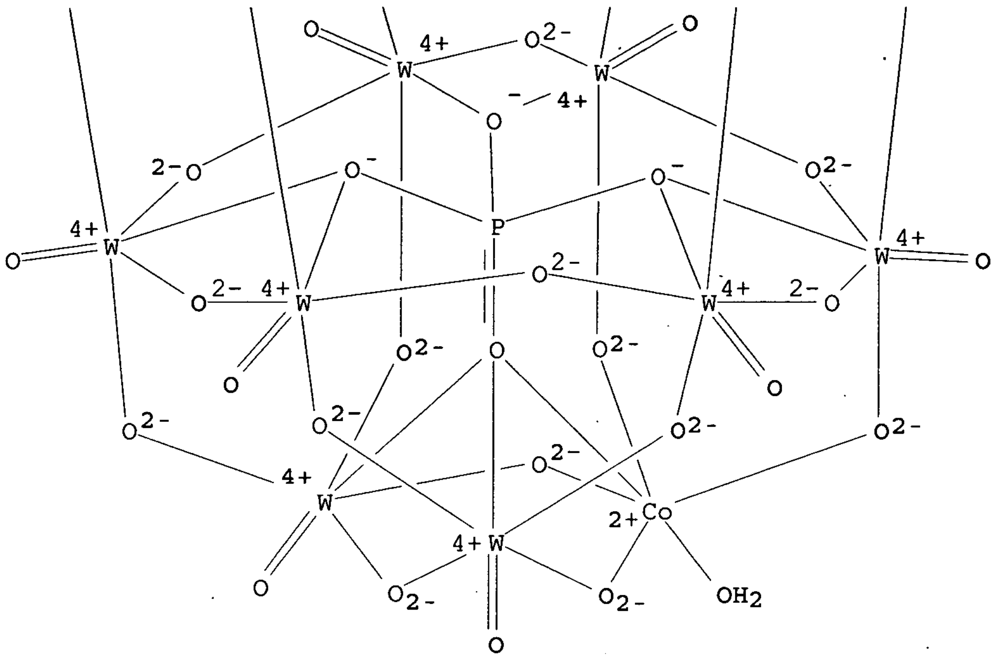

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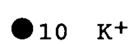

RN 226422-97-5 HCAPLUS
CN Ethanaminium, N,N-diethyl-N-methyl-, (aquacobaltate)tetracosa-μ-oxoundecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':κO''']]undecatungstate(5-) (5:1) (9CI) (CA INDEX NAME)

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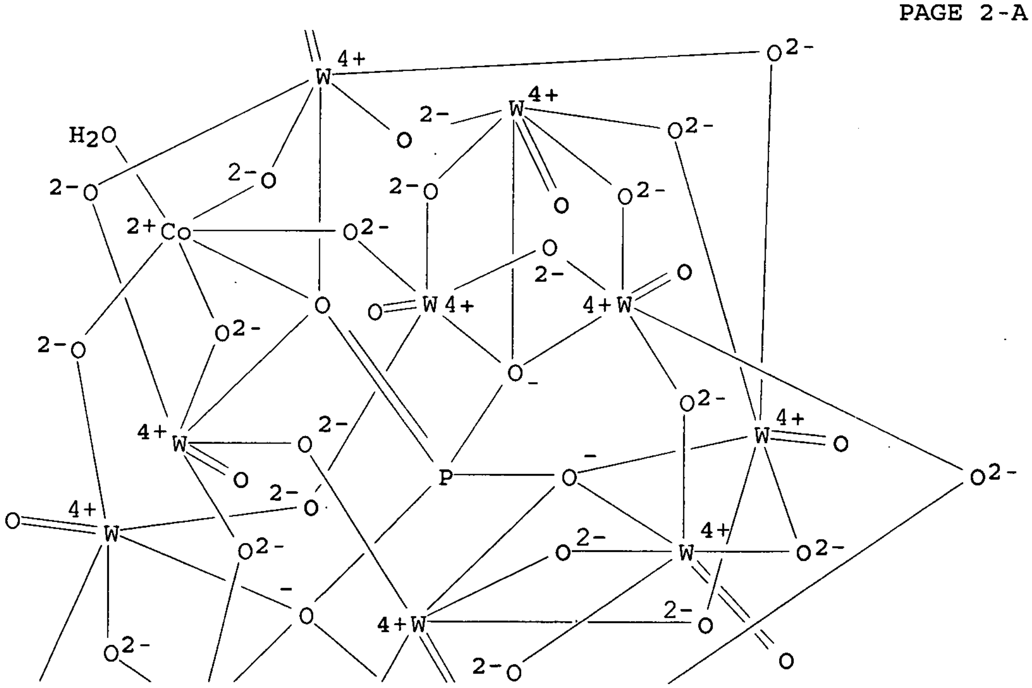
CRN 66258-00-2
CMF Co H2 O40 P W11
CCI CCS

PAGE 1-A

PAGE 2-A



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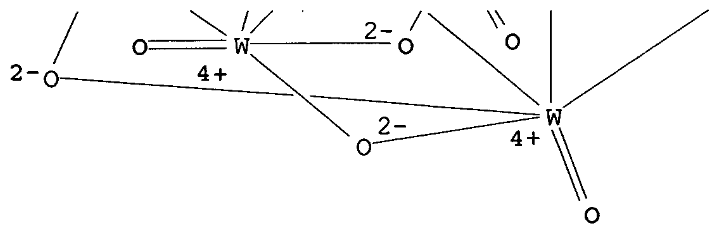
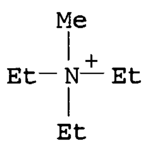


CM 2

CRN 302-57-8
CMF C7 H18 N



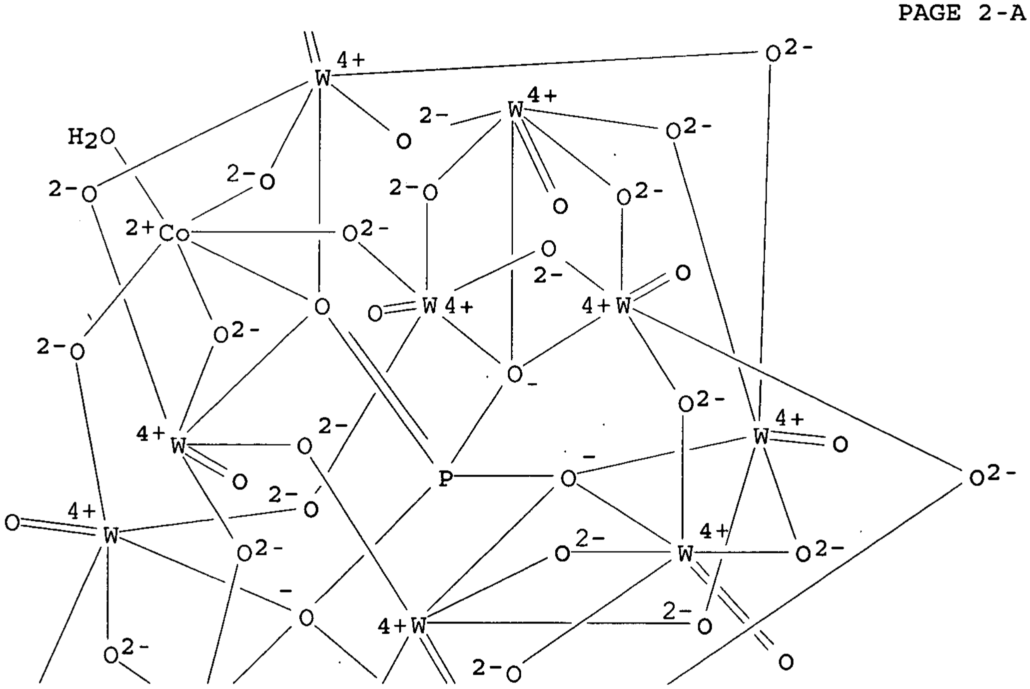
RN 226422-98-6 HCAPLUS
CN 1-Propanaminium, N,N,N-tripropyl-, (aquacobaltate)tetracosa-μ-oxoundecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':κO''']]undecatungstate(5-) (5:1) (9CI) (CA INDEX NAME)

CM 1

CRN 66258-00-2
CMF Co H2 O40 P W11
CCI CCS

PAGE 1-A

PAGE 2-A



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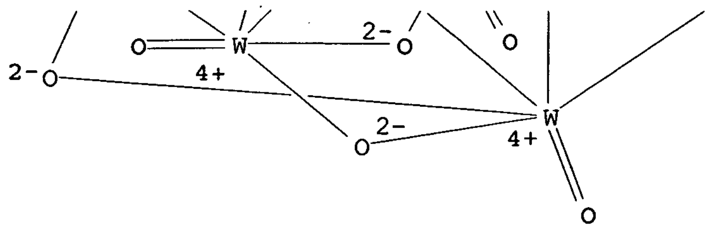

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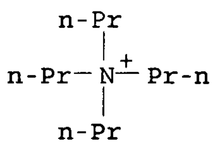
CRN 13010-31-6
CMF C12 H28 N



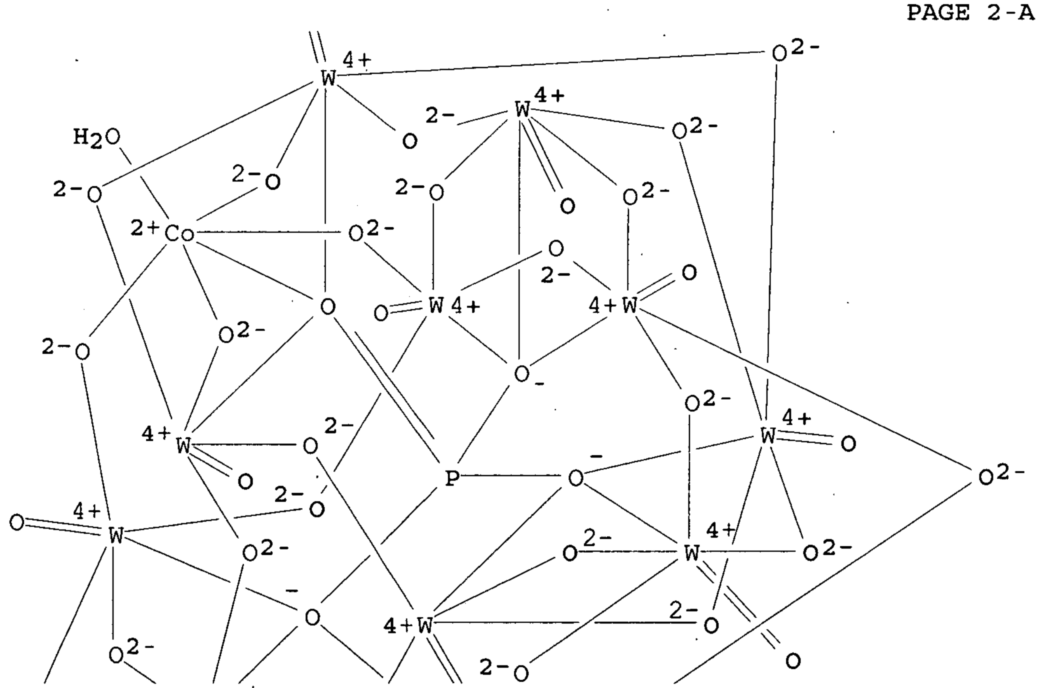
RN 226422-99-7 HCAPLUS
CN 1-Butanaminium, N,N,N-tributyl-, (aquacobaltate)tetracosa-μ-oxoundecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':κO''']]undecatungstate(5-) (5:1) (9CI) (CA INDEX NAME)

CM 1

CRN 66258-00-2
CMF Co H2 O40 P W11
CCI CCS

PAGE 1-A

PAGE 2-A



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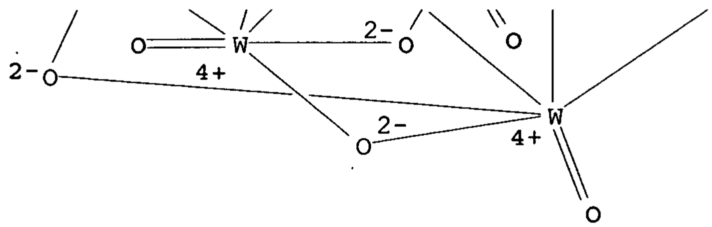

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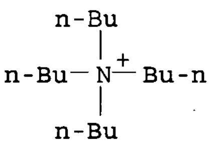
CRN 10549-76-5
CMF C16 H36 N



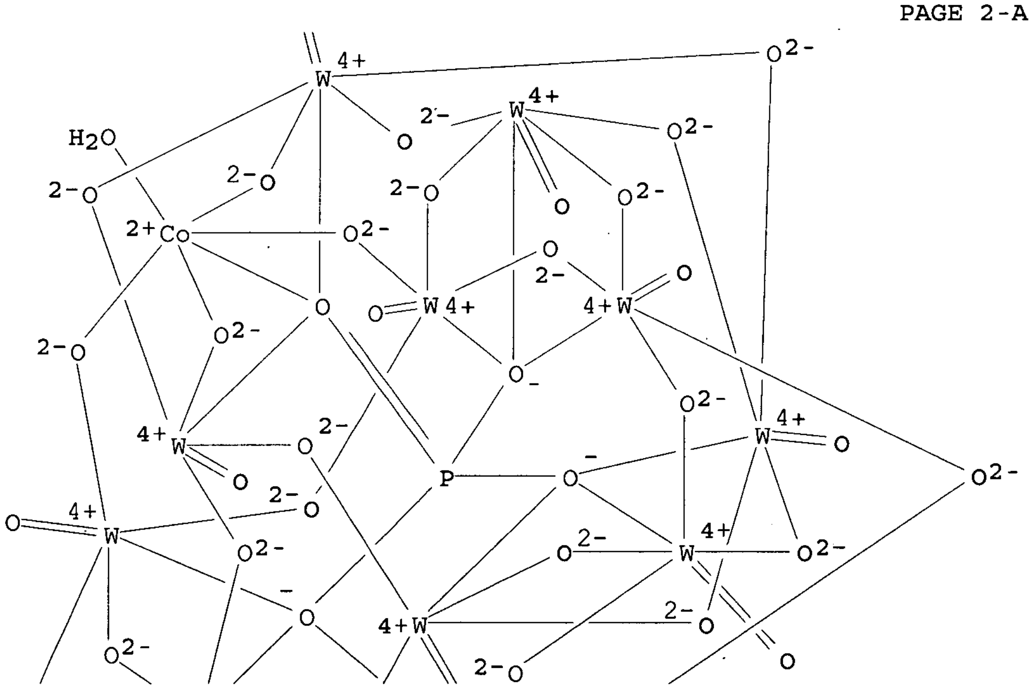
RN 226423-00-3 HCAPLUS
CN 1-Tetradecanaminium, N,N,N-trimethyl-, (aquacobaltate)tetracosa-μ-oxoundecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':κO''']]undecatungstate(5-) (5:1) (9CI) (CA INDEX NAME)

CM 1

CRN 66258-00-2
CMF Co H2 O40 P W11
CCI CCS

PAGE 1-A

PAGE 2-A



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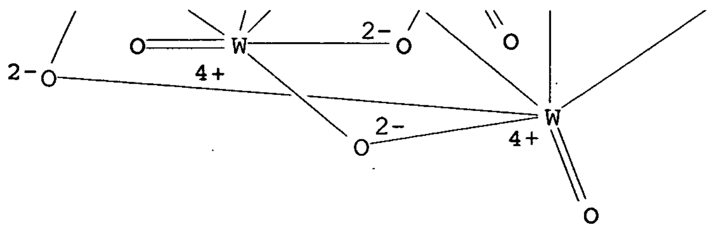

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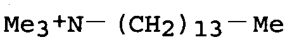
CRN 10182-92-0
CMF C17 H38 N



RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 53 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:162734 HCAPLUS
DN 130:338418
TI Alumoxo-heteropoly compounds as weakly coordinating anions for metallocenes in the oligomerization of alkenes
AU Van Looveren, L. K. M.; Vankelecom, I. F. J.; De Vos, D. E.; Wouters, B. H. J.; Grobet, P. J.; Jacobs, P. A.
CS Departement Interfasechemie, Centrum voor Oppervlaktechemie en Katalyse, K.U. Leuven, Heverlee, B-3001, Belg.
SO Applied Catalysis, A: General (**1999**), 180(1-2), L5-L10
CODEN: ACAGE4; ISSN: 0926-860X
PB Elsevier Science B.V.
DT Journal
LA English
AB The in situ preparation of Me aluminoxane (MAO) on the crystalline structure of heteropoly acids generates a highly active and weakly coordinating compound for metallocene catalysts. The MAO-phase formed by the controlled hydrolysis of Me3Al covers the Keggin unit of the heteropoly compound The primary Keggin structure of the heteropoly compound is preserved and MAO-formation induces an intensive charge transfer in the visible region. The 27Al-NMR of alumoxo-phosphotungstate illustrates the reversible interaction of the Lewis acid Al of the anchored aluminoxane with the bridging O atoms of the phosphotungstate Keggin structure. The interaction of the alumoxo-heteropoly compound with an ansa-metallocene produces a highly active catalyst for the co-oligomerization of ethene and propene. The softness of the heteropoly compound combined with the pseudo-liquid phase formation of the alumoxo-heteropoly compds. exceeds the activity of the homogeneous system and the stability of the heterogeneous MAO-anchored materials. The **composition** of the Keggin structure dets. the catalytic potential of the metallocene which is transformed in a temperature dependent oligomerization and a fluctuating alternation of monomer and comonomer. The mol. weight and the Me branching of the oligomer mols. are designing tools for the physicochem. features of a synthetic lubricants. A comparable charge delocalization over each heteropoly compound results in a single-sited catalytic system inducing a small

dispersity of oligomer products.

CC 35-3 (Chemistry of Synthetic High Polymers)

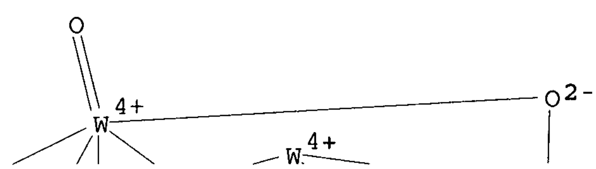
IT **1343-93-7**, Phosphotungstic acid **12027-38-2**,
Silicotungstic acid 12636-72-5, Dimethylzirconocene 146814-57-5,
(Dimethylsilylene)bis(indenyl)dimethylzirconium 204201-37-6
RL: **CAT (Catalyst use)**; USES (Uses)
(alumoxo-**heteropolyacid**/metallocene catalysts for
ethylene-propylene oligomerization)

IT **1343-93-7**, Phosphotungstic acid **12027-38-2**,
Silicotungstic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(alumoxo-**heteropolyacid**/metallocene catalysts for
ethylene-propylene oligomerization)

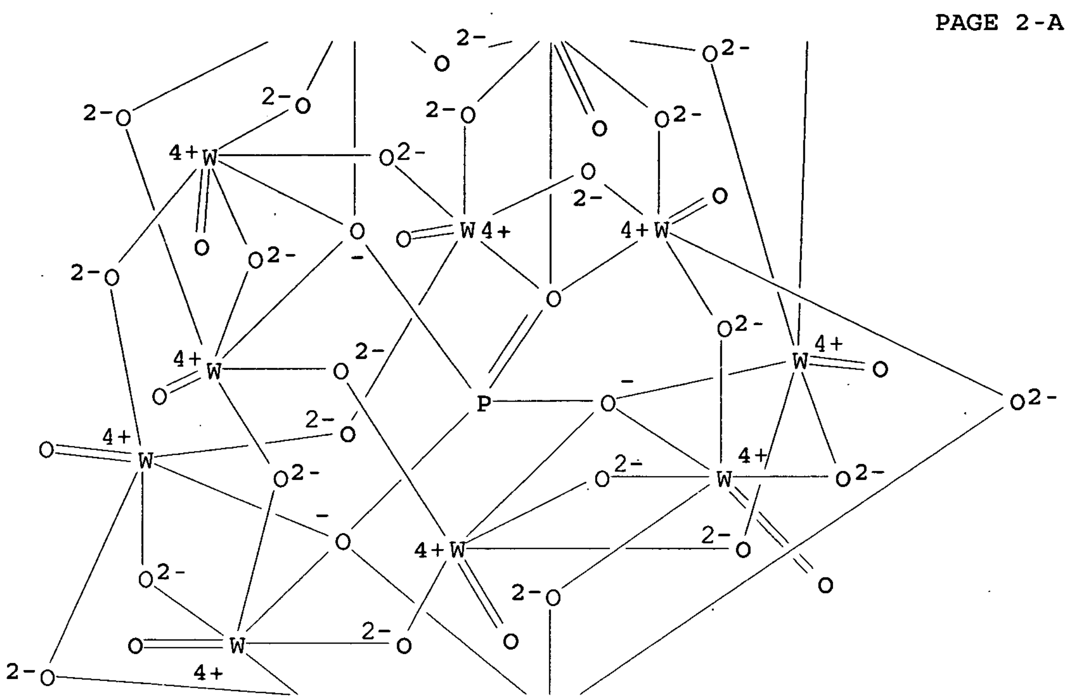
RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-
κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

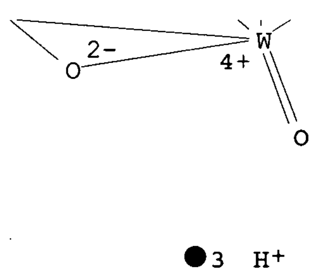
PAGE 1-A



PAGE 2-A

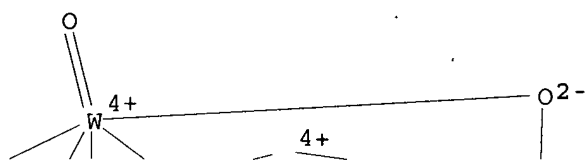


PAGE 3-A

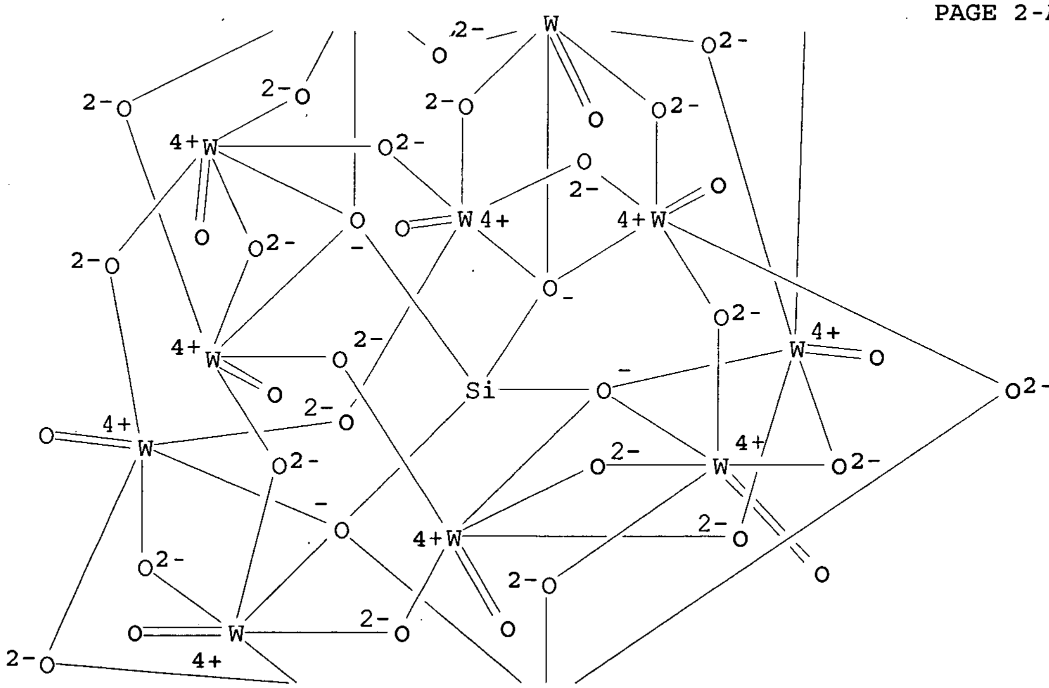


RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

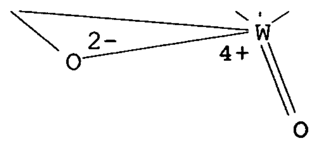
PAGE 1-A



PAGE 2-A



PAGE 3-A



●4 H^+

RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 54 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:113624 HCAPLUS
DN 130:169813
TI Controlled oxidation of substituted hydrocarbons and heteropoly acid catalysts for use therein
IN Gubelmann-Bonneau, Michel; Poix-Davaine, Claire; Ponceblanc, Herve
PA Rhodia Chimie, Fr.
SO PCT Int. Appl., 33 pp.
CODEN: PIXXD2
DT Patent
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9906338	A1	19990211	WO 1998-FR1713	19980731 <--
	W: AL, AM, AU, AZ, BA, BB, BG, BR, BY, CA, CN, CU, CZ, EE, GE, HU, ID, IL, IS, JP, KG, KP, KR, KZ, LC, LK, LR, LT, LV, MD, MG, MK, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, SL, TJ, TM, TR, TT, UA, US, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	FR 2766818	A1	19990205	FR 1997-9890	19970801 <--
	FR 2766818	B1	19990910		
	ZA 9806754	A	20000131	ZA 1998-6754	19980729 <--
	AU 9889864	A1	19990222	AU 1998-89864	19980731 <--
	EP 1003697	A1	20000531	EP 1998-941513	19980731 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2001512089	T2	20010821	JP 2000-505103	19980731 <--
PRAI	FR 1997-9890	A	19970801 <--		
	WO 1998-FR1713	W	19980731 <--		

AB A substituted hydrocarbon substrate is contacted with a source of O in the presence of a catalyst having an active phase obtained from a heteropoly acid Hf[CcDdEeOx], in which C represents Mo and/or W, D represents P, As, Sb, Si, Ge, and/or B, and E represents V, optionally in combination with ≥1 metal of Group VB, VIIB, VIII or Cr, optionally by at least partial neutralization with a cation [AaBb] replacing Hf, in which A represents ≥1 monovalent cation and B represents VO2+, VO3+, an ion of an alkaline earth metal or of a metal of Group VIIB, VIII, IB, IVA and VA [c = 5-20, d = 1-5, e = 1-9, f = a + αb (α is the charge on B, namely 2-4), x being chosen to balance valences] and the substrate contains a CH2 group bearing an electron-attracting group (especially CF3) or atom. Thus, passing a mixture of MeCF3 15.6, O2 15.6, H2O 7.8, He 55.9, and

N2 5.1 mol% over (VO)HPW12O40 at 225° resulted in 22.0% conversion of MeCF3 with 95.7% selectivity to CF3CH2OCH2CF3. By varying the temperature and catalyst **composition** selectivity to CF3CO2H or CF3CO2CH2CF3 could be obtained.

IC ICM C07B033-00
ICS B01J027-188; B01J027-199; C07C053-18; C07C069-63; C07C043-12; C07C051-215; C07C067-39; C07C041-01

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67

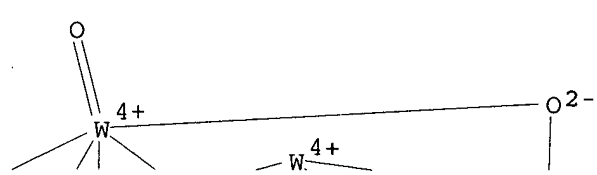
IT **1343-93-7 12293-15-1 12786-62-8** 160172-48-5
167268-54-4 220412-34-0
RL: **CAT (Catalyst use)**; USES (Uses)
(controlled oxidation of substituted hydrocarbons by use of **heteropoly** acid catalysts)

IT **1343-93-7 12293-15-1 12786-62-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(controlled oxidation of substituted hydrocarbons by use of **heteropoly** acid catalysts)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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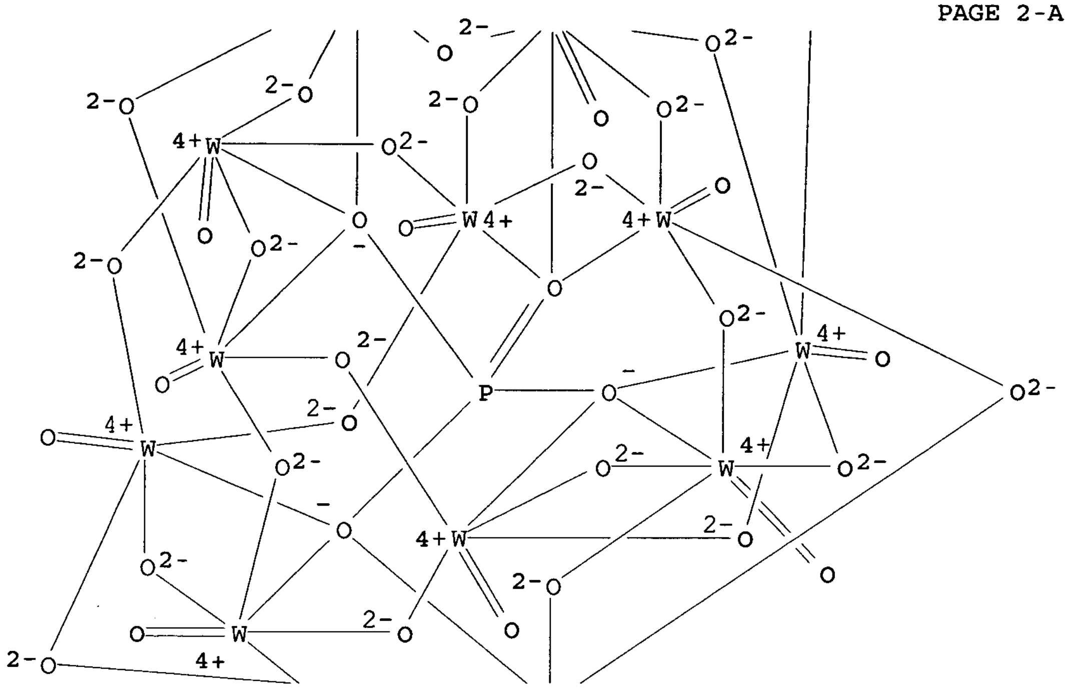
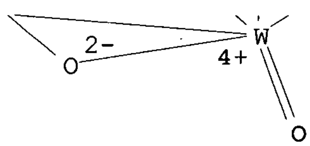


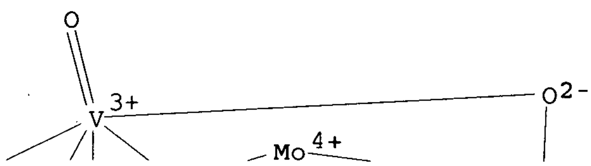
PAGE 3-A



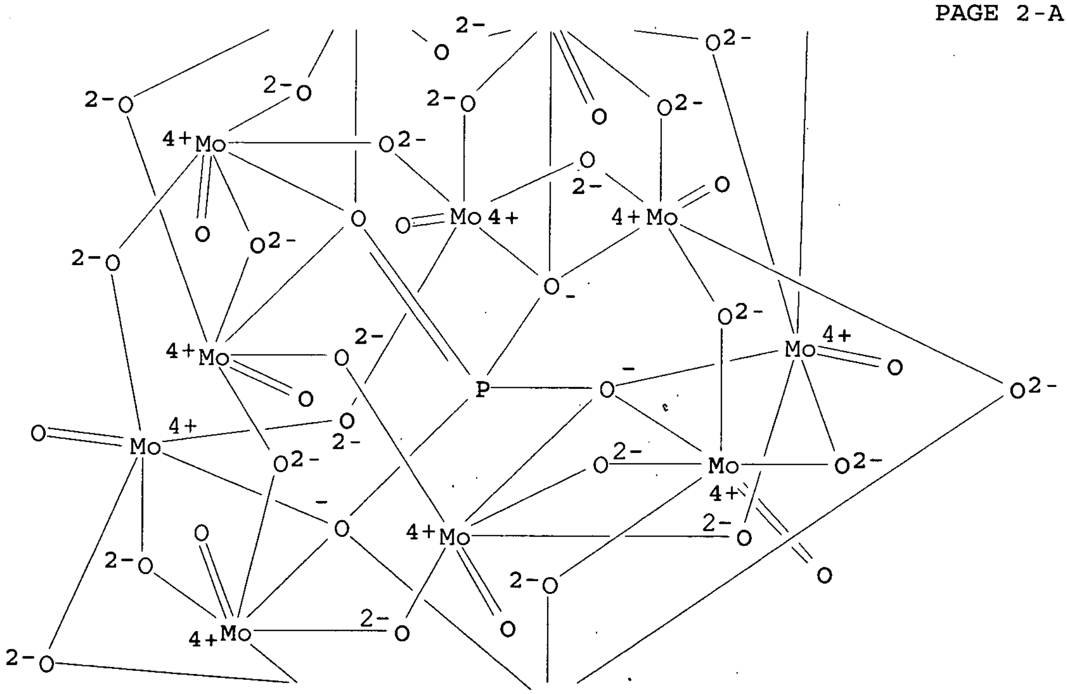
●3 H^+

RN 12293-15-1 HCAPLUS
CN Vanadate(4-), (eicosa-μ-oxoundecaoxoundecamolybdate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)

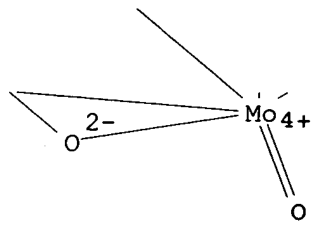
PAGE 1-A



PAGE 2-A



PAGE 3-A

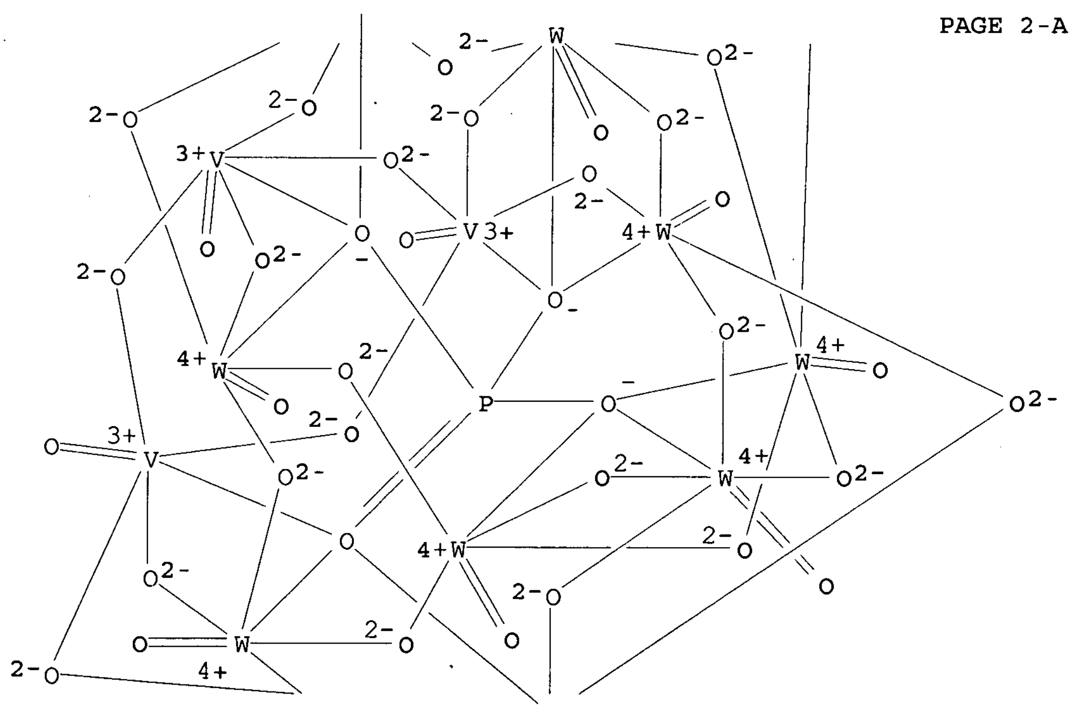


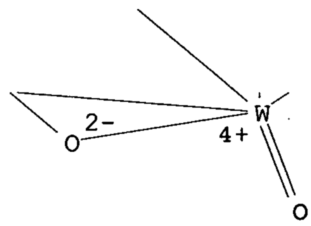
●4 H^+

RN 12786-62-8 HCAPLUS
CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxononaoxononatungstate)[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tri-, hexahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A





PAGE 3-A

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 55 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:111091 HCAPLUS
DN 130:290553
TI Synthesis and surface acidic property of hydrotalcite-like compounds and their heteropolyanion intercalates
AU Guo, Jun; Jiang, Dazhen; Min, Enze
CS Department of Chemistry, Xiangtan Normal University, Xiangtan, 411100, Peop. Rep. China
SO Huaxue Yanjiu Yu Yingyong (**1998**), 10(6), 610-616
CODEN: HYYIFM; ISSN: 1004-1656
PB Huaxue Yanjiu Yu Yingyong Bianjibu
DT Journal
LA Chinese
AB Pillared intercalation compds. of M2Al(OH)6NO3 (M = Mg, Zn) hydrotalcite-like compds. (HTLs) with transition metal substituted polyoxometalates were synthesized and characterized by XRD, IR, and elemental analyses. For example, SiW11Co-Zn2Al was synthesized by mixing hydrotalcite Zn2Al(OH)6NO3 with H2O, dripping in K6SiW11CoO39, stirring at 85° and pH 6.5 for 3-4 h, and drying at 80°. The surface acidic properties and acidic types of the synthesized products were studied by NH3-TPD and Py-IR methods, and the acid-base catalytic behaviors were examined over isopropanol conversions. There are 2 types of active sites (acid and base) on the surface of the HTLs, and their relative strength are related to the types of the anion pillars. The acidic strength increased slightly and the B-acidic sites were produced with the polyoxometalate intercalating into the HTLs layers.
CC 78-3 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 45, 67
IT 69048-26-6 128423-19-8, Aluminum zinc hydroxide **nitrate** (AlZn2(OH)6NO3)
RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(catalyst for isopropanol dehydrogenation and intercalation reaction with polyoxometalates)
IT 69048-26-6DP, pillared intercalation product with transition metal substituted tungstosilicate heteropoly acids 128423-19-8DP, Aluminum zinc hydroxide **nitrate** (AlZn2(OH)6NO3), pillared intercalation product with transition metal substituted tungstosilicate heteropoly acids
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation and catalyst for isopropanol dehydrogenation)
IT **37308-25-1DP**, pillared intercalation product with

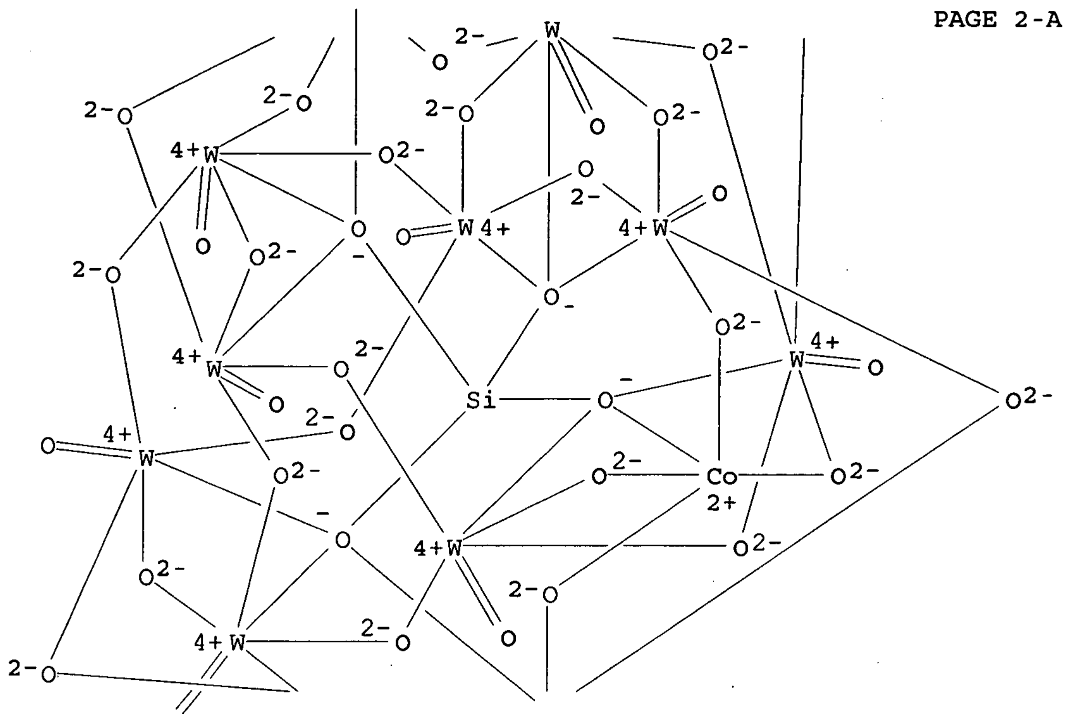
aluminum-magnesium and -zinc hydroxides **56367-34-1DP**, pillared intercalation product with aluminum-magnesium and -zinc hydroxides **149275-00-3DP**, pillared intercalation product with aluminum-magnesium and -zinc hydroxides **158702-58-0DP**, pillared intercalation product with aluminum-magnesium and -zinc hydroxides **158702-59-1DP**, pillared intercalation product with aluminum-magnesium and -zinc hydroxides **158702-60-4DP**, pillared intercalation product with aluminum-magnesium and -zinc hydroxides
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation and catalytic activity for isopropanol dehydrogenation of aluminum-magnesium and -zinc hydroxide pillared intercalation compds. with **polyoxometalates**)

IT **37308-25-1DP**, pillared intercalation product with aluminum-magnesium and -zinc hydroxides **56367-34-1DP**, pillared intercalation product with aluminum-magnesium and -zinc hydroxides **149275-00-3DP**, pillared intercalation product with aluminum-magnesium and -zinc hydroxides **158702-58-0DP**, pillared intercalation product with aluminum-magnesium and -zinc hydroxides **158702-59-1DP**, pillared intercalation product with aluminum-magnesium and -zinc hydroxides **158702-60-4DP**, pillared intercalation product with aluminum-magnesium and -zinc hydroxides
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation and catalytic activity for isopropanol dehydrogenation of aluminum-magnesium and -zinc hydroxide pillared intercalation compds. with **polyoxometalates**)

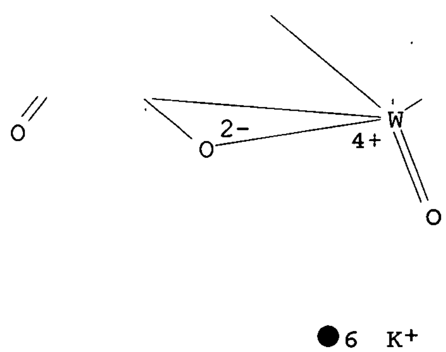
RN 37308-25-1 HCAPLUS
CN Tungstate(6-), cobaltate[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tetracosa-μ-oxoundecaoxoundeca-, hexapotassium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



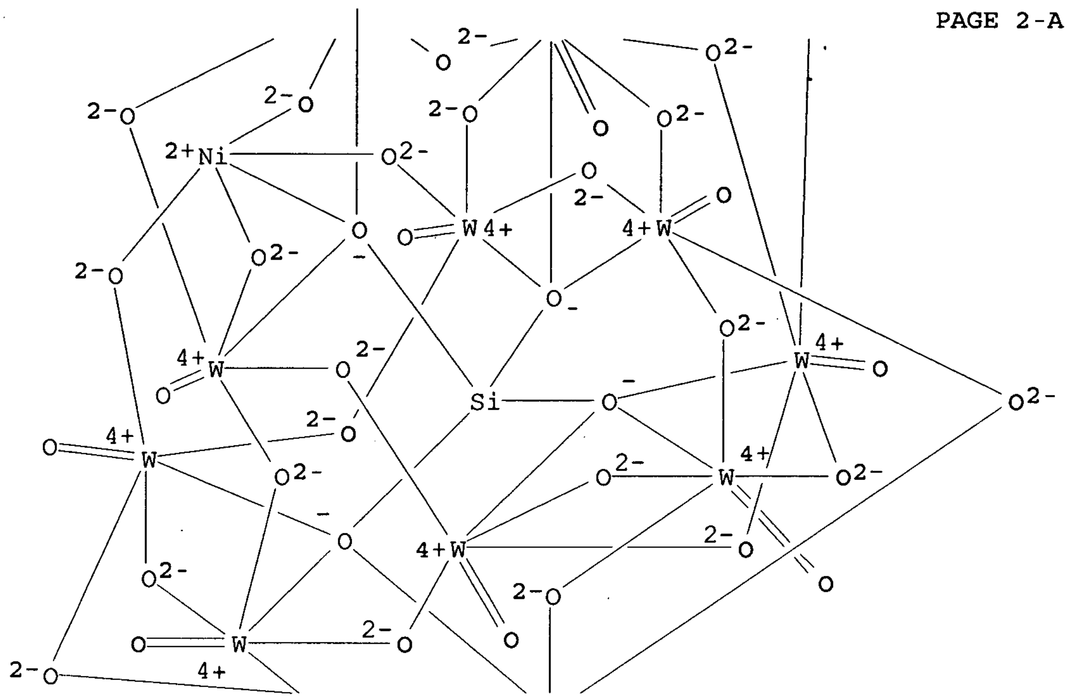
PAGE 3-A



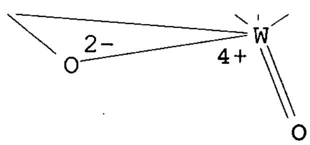
RN 56367-34-1 HCAPLUS
CN Tungstate(6-), nickelate[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tetracosa-μ-oxoundecaoxaundeca-, hexapotassium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



PAGE 3-A

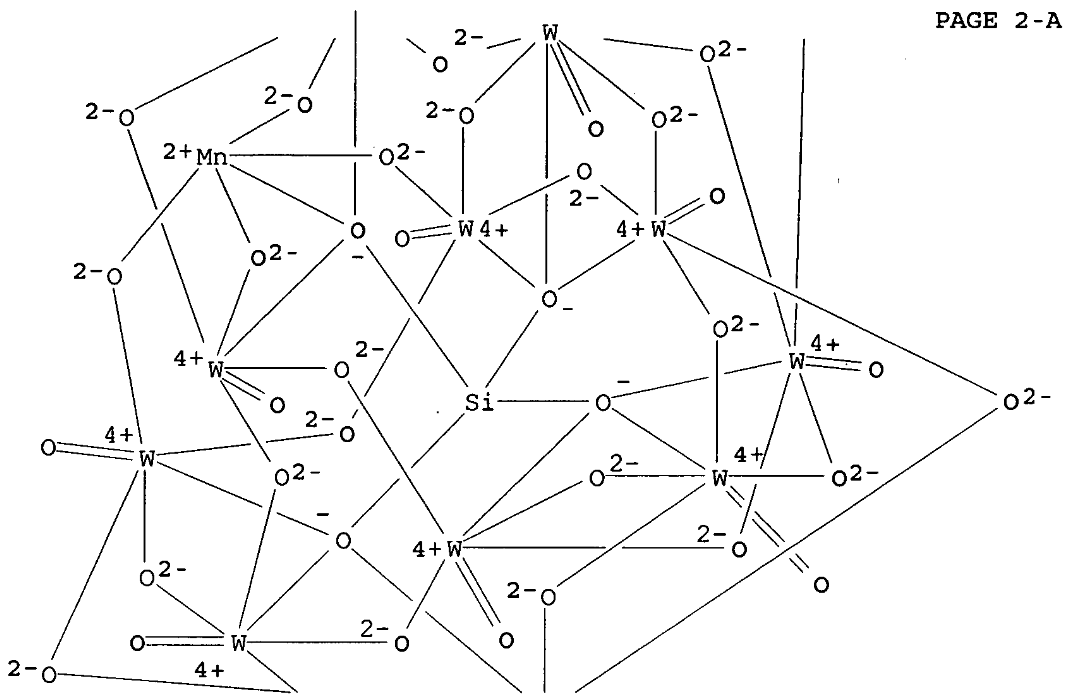


●6 K^+

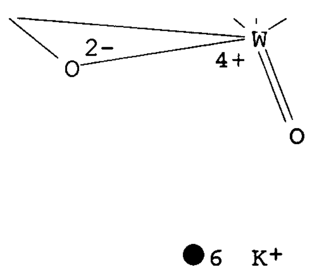
RN 149275-00-3 HCAPLUS
CN Tungstate(6-), manganate[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tetracosa-μ-oxoundecaoxoundeca-, hexapotassium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A

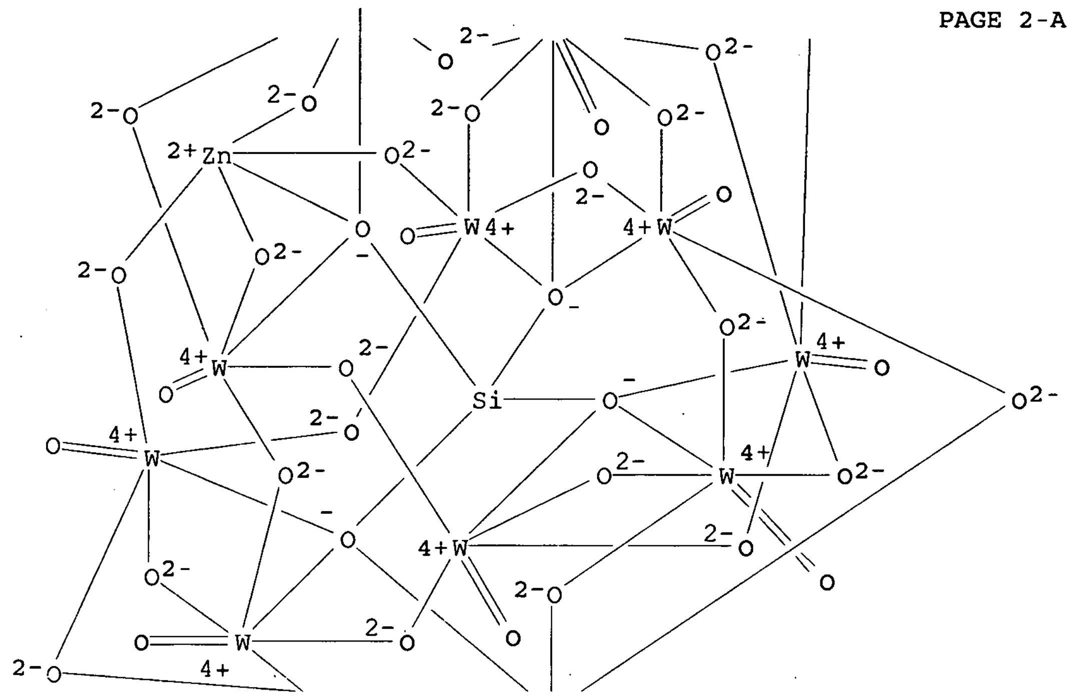


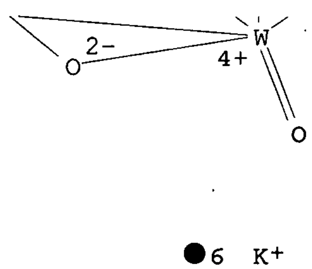
PAGE 3-A



RN 158702-58-0 HCAPLUS
CN Tungstate(6-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxoundecaoxozincateundeca-,
hexapotassium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

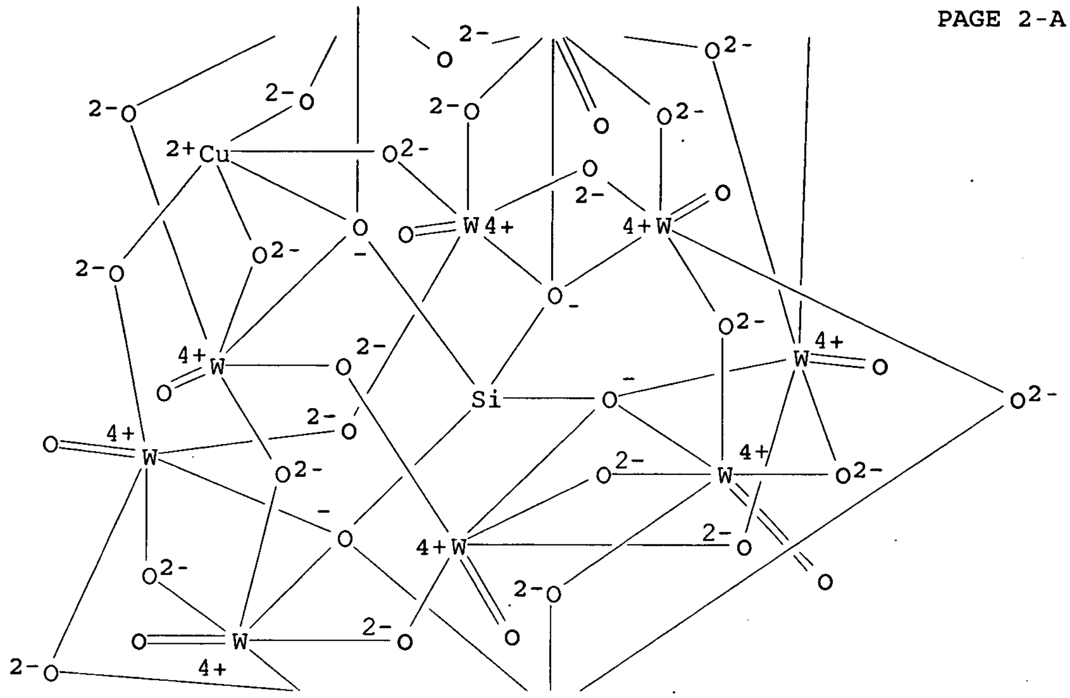




RN 158702-59-1 HCAPLUS
CN Tungstate(6-), cuprate[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tetracosa-μ-oxoundecaoxoundeca-, hexapotassium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



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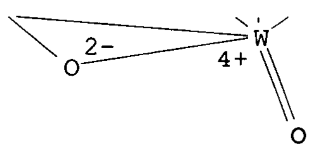
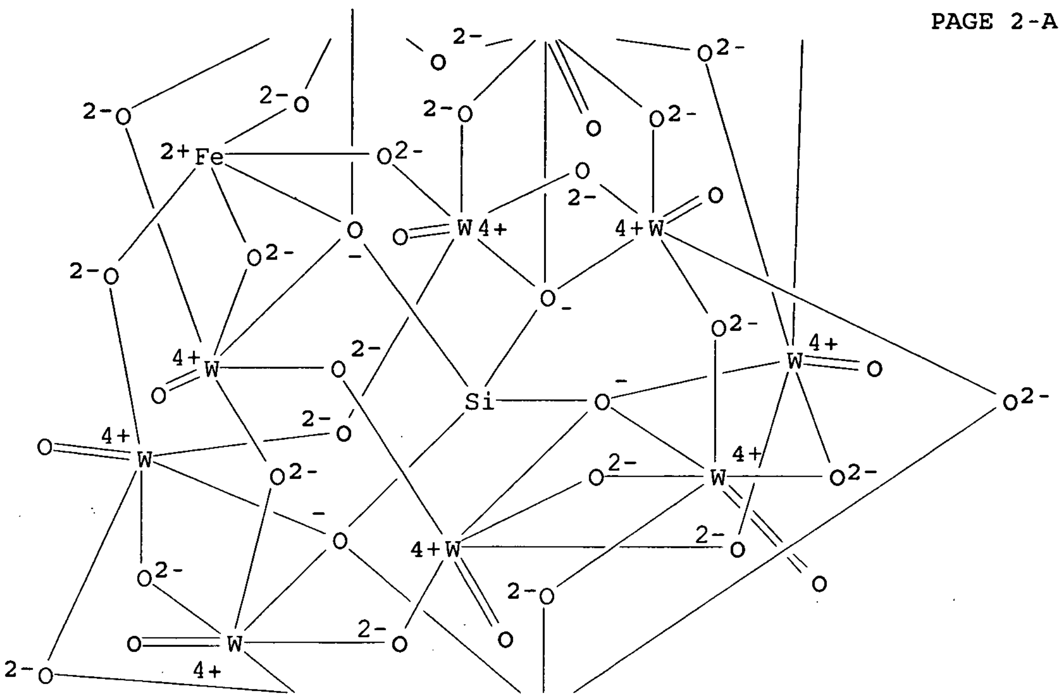


● 6 K^+

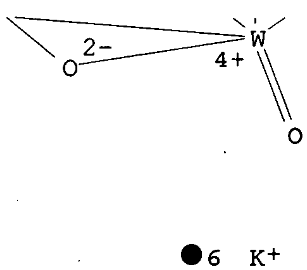
RN 158702-60-4 HCAPLUS
CN Tungstate(6-), ferrate[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tetracosa-μ-oxoundecaoxoundeca-, hexapotassium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



PAGE 3-A



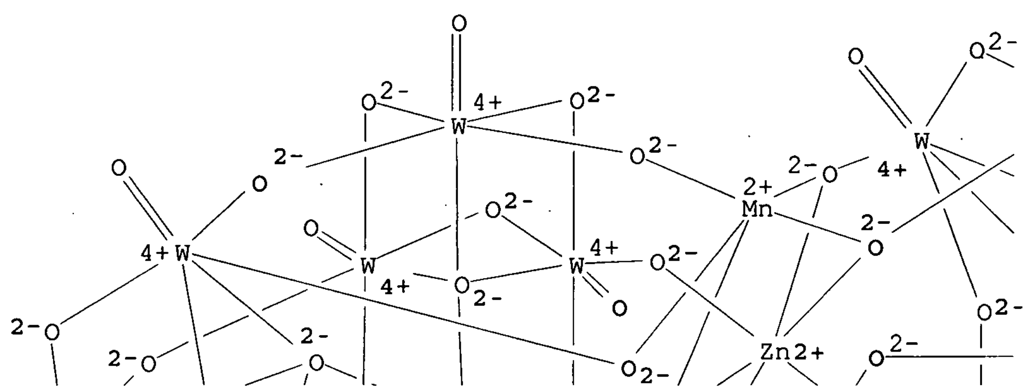
L32 ANSWER 56 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:6683 HCAPLUS
DN 128:101848
TI Oxidation of 1,3-dimethyladamantane by hydrogen peroxide in the presence of lacunar-type polyoxometalates
AU Karaulova, E. N.; Zaikin, V. G.; Bagrii, E. I.
CS Russia
SO Neftekhimiya (**1997**), 37(5), 396-401
CODEN: NEFTAH; ISSN: 0028-2421
PB Nauka
DT Journal
LA Russian
AB Lacuna-type polyoxometalates RMX(H2O)W11O39 (M = Fe, Co, Cu, Mn; X = Si, P; R = 1-hexadecylpyridinium) were prepared and used to catalyze the title reaction. When X = Si and M = Fe or Mn, oxidation occurred only at the tertiary C atom. The most effective catalyst for oxidation of the secondary

C atom contained Fe and P.
CC 24-8 (Alicyclic Compounds)
IT 158093-21-1P **201421-74-1P 201421-75-2P**
201421-76-3P 201421-77-4P 201421-78-5P
201421-79-6P
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(oxidation of 1,3-dimethyladamantane by hydrogen peroxide in presence of
lacuna-type **polyoxometalates**)
IT 123-03-5, Pyridinium, 1-hexadecyl-, chloride 702-79-4,
1,3-Dimethyladamantane 1333-82-0, Chromic anhydride 6834-92-0,
Disodium silicate 7722-84-1, Hydrogen peroxide, reactions 7785-87-7,
Manganese sulfate **10421-48-4**, Ferric **nitrate**
13472-45-2, Sodium tungstate 37300-94-0 105785-76-0 133520-22-6
133854-52-1, Manganese sodium tungsten zinc oxide (Mn2Na12W19Zn3O68)
135266-66-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of 1,3-dimethyladamantane by hydrogen peroxide in presence of
lacuna-type polyoxometalates)
IT **201421-74-1P 201421-75-2P 201421-76-3P**
201421-77-4P 201421-78-5P 201421-79-6P
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(oxidation of 1,3-dimethyladamantane by hydrogen peroxide in presence of
lacuna-type **polyoxometalates**)
RN 201421-74-1 HCAPLUS
CN Pyridinium, 1-hexadecyl-, dimanganateoctatriaconta-μ-oxotetra-μ3-
oxoocta-μ4-oxooctadecaoxotrizincatenonadecatungstate(12-) (12:1) (9CI)
(CA INDEX NAME)

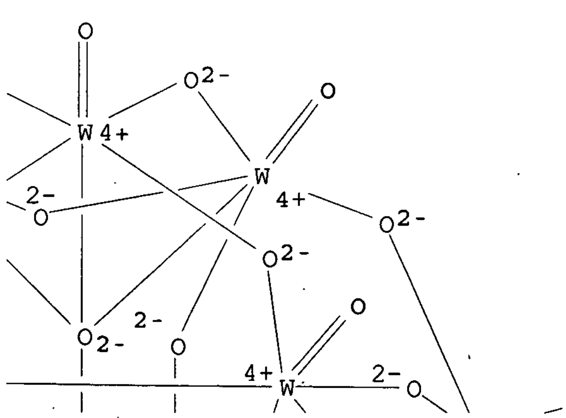
CM 1

CRN 168755-42-8
CMF Mn2 O68 W19 Zn3
CCI CCS

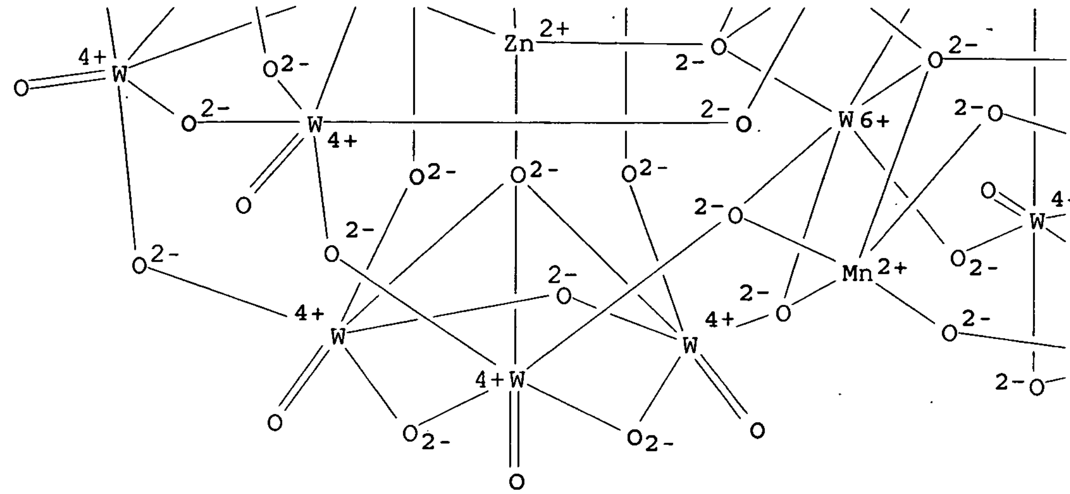
PAGE 1-A



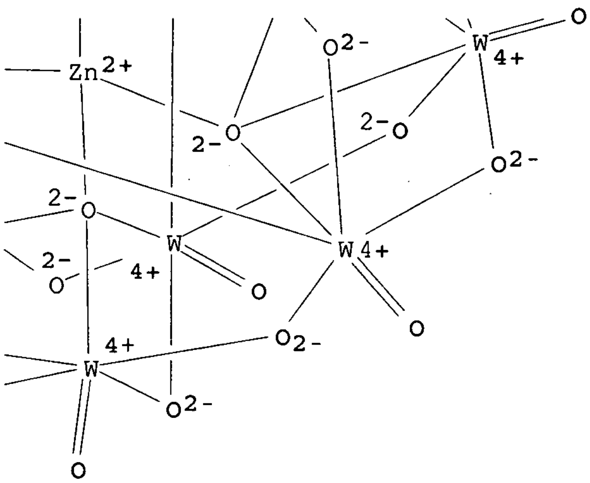
PAGE 1-B



PAGE 2-A

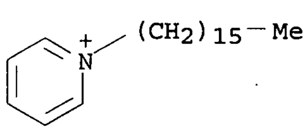


PAGE 2-B



CM 2

CRN 7773-52-6
CMF C21 H38 N



RN 201421-75-2 HCAPLUS
CN Pyridinium, 1-hexadecyl-, (aquamanganate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]tetracosa-μ-

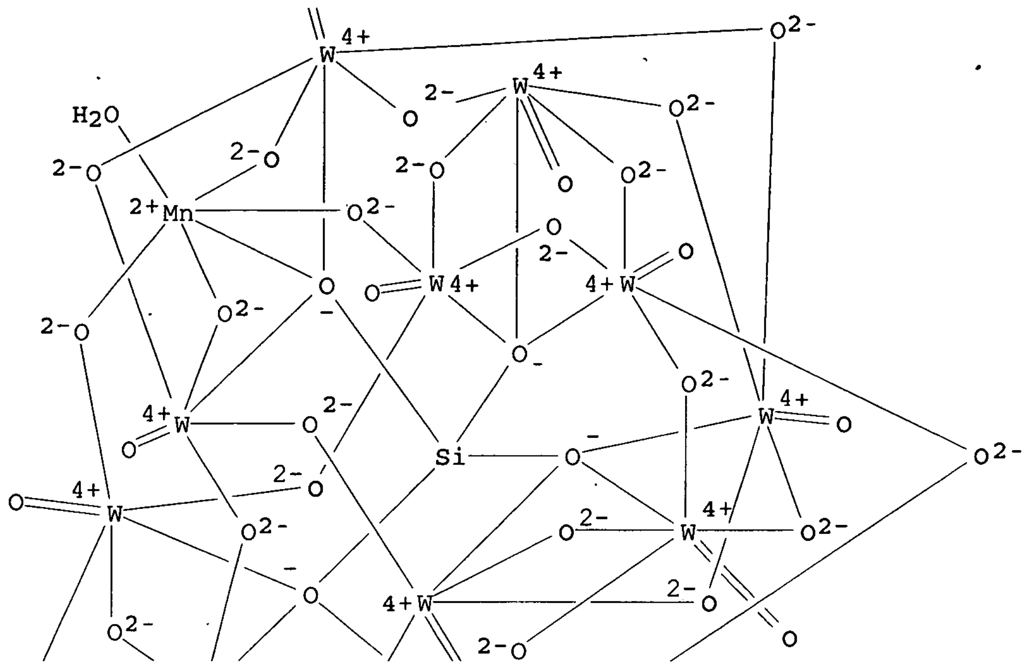
oxoundecaoxoundecatungstate(6-) (6:1) (9CI) (CA INDEX NAME)

CM 1

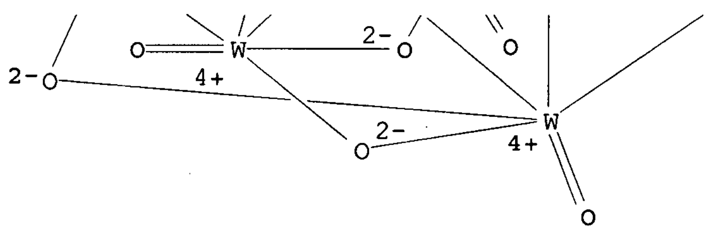
CRN 53663-95-9
CMF H2 Mn O40 Si W11
CCI CCS

PAGE 1-A

PAGE 2-A

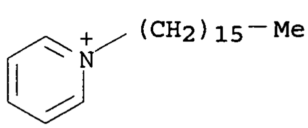


PAGE 3-A



CM 2

CRN 7773-52-6
CMF C21 H38 N



RN 201421-76-3 HCAPLUS
CN Pyridinium, 1-hexadecyl-, (aquacuprate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tetracosa-μ-oxoundecaoxoundecatungstate(6-) (6:1) (9CI) (CA INDEX NAME)

CM 1

CRN 53663-94-8
CMF Cu H2 O40 Si W11
CCI CCS

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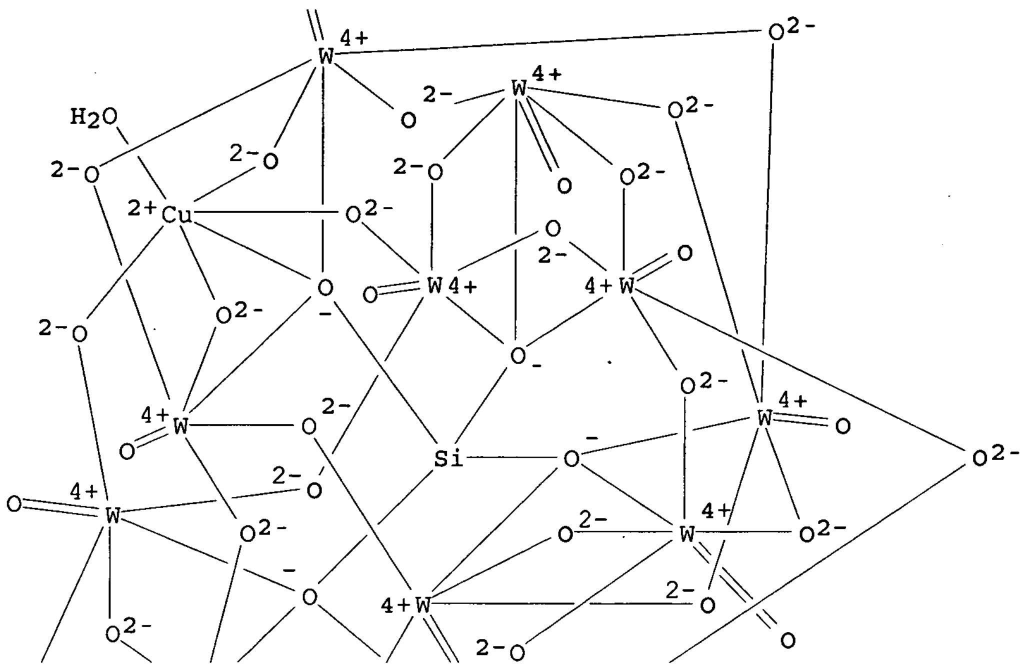
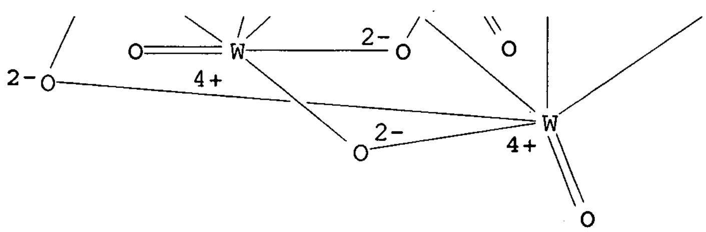
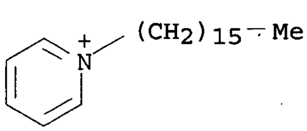


PAGE 3-A



CM 2

CRN 7773-52-6
CMF C21 H38 N



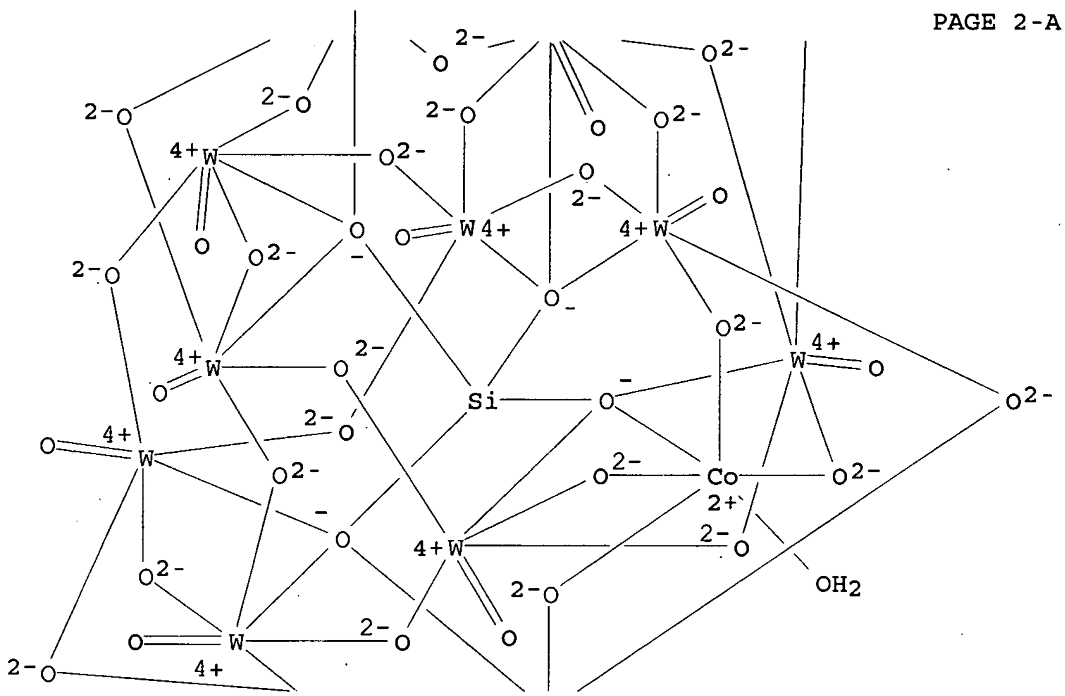
RN 201421-77-4 HCAPLUS
CN Pyridinium, 1-hexadecyl-, (aquacobaltate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tetracosa-μ-oxoundecaoxoundecatungstate(6-) (6:1) (9CI) (CA INDEX NAME)

CM 1

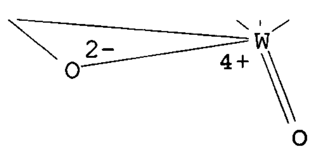
CRN 12516-12-0
CMF Co H2 O40 Si W11
CCI CCS

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A

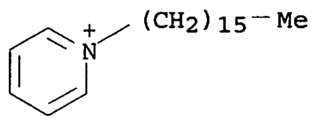


PAGE 3-A



CM 2

CRN 7773-52-6
CMF C21 H38 N



RN 201421-78-5 HCAPLUS
CN Pyridinium, 1-hexadecyl-, (aquaferrate)[μ12-[orthosilicato(4-)-
κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]tetracosa-μ-
oxoundecaoxoundecatungstate(5-) (5:1) (9CI) (CA INDEX NAME)

CM 1

CRN 39449-49-5
CMF Fe H2 O40 Si W11
CCI CCS

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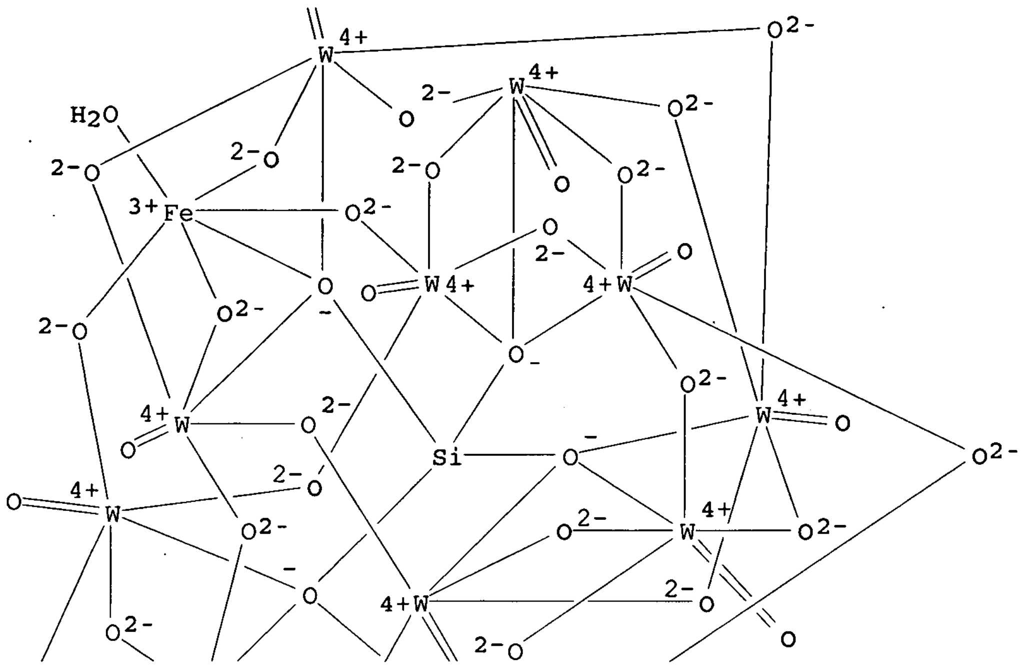
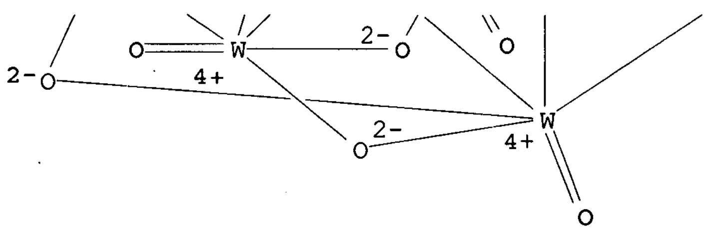
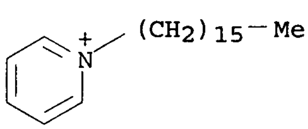


PAGE 3-A



CM 2

CRN 7773-52-6
CMF C21 H38 N



RN 201421-79-6 HCAPLUS
CN Pyridinium, 1-hexadecyl-, (aquaferrate)tetracosa-μ-oxoundecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':.kappa.O'':κO'':κO'':κO''':κO''':κO''']]undeca tungstate(4-) (4:1) (9CI) (CA INDEX NAME)

CM 1

CRN 94772-22-2
CMF Fe H2 O40 P W11
CCI CCS

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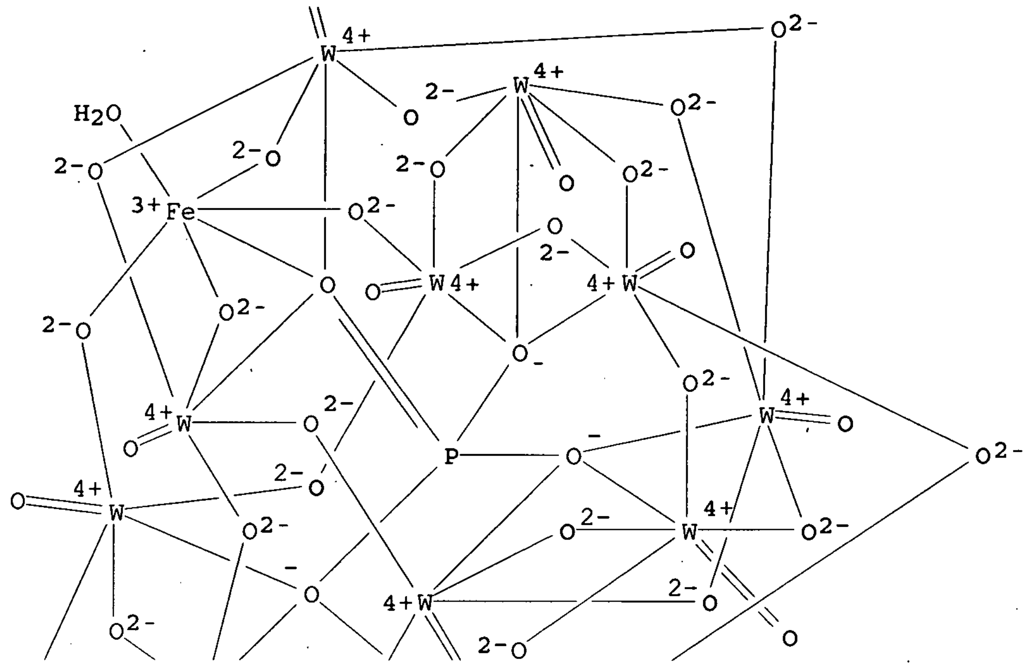
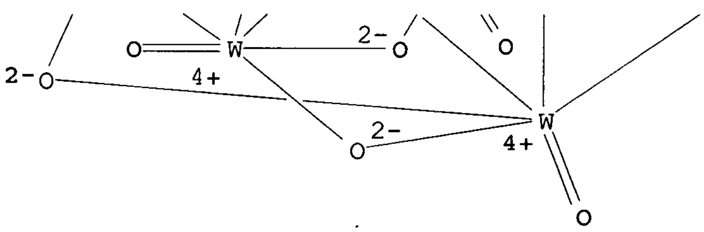
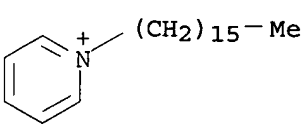


PAGE 3-A



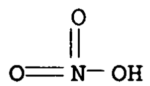
CM 2

CRN 7773-52-6
CMF C21 H38 N



IT **10421-48-4**, Ferric **nitrate**
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of 1,3-dimethyladamantane by hydrogen peroxide in presence of lacuna-type polyoxometalates)
RN 10421-48-4 HCAPLUS

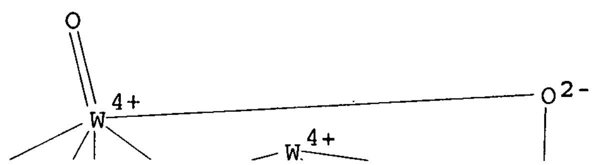
CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)



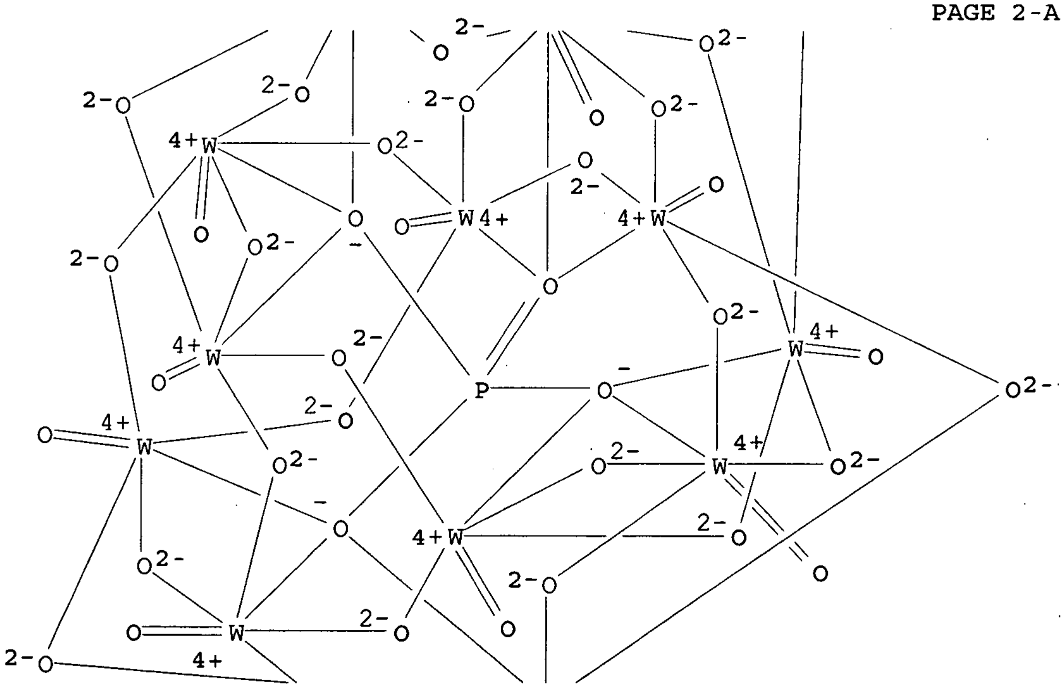
●1/3 Fe(III)

L32 ANSWER 57 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:576007 HCAPLUS
DN 127:252303
TI The sorption and reaction of NO and NO2 on metal-oxygen-cluster compounds (heteropoly oxometalates)
AU Belanger, R.; Moffat, J. B.
CS Department of Chemistry, Guelph-Waterloo Centre for Graduate Work in Chemistry, University of Waterloo, Waterloo, ON, N2L 3G1, Can.
SO Environmental Research Forum (**1996**), 1-2(Chemistry and Energy), 63-76
CODEN: ERFOFX; ISSN: 1421-0274
PB Transtec
DT Journal
LA English
AB Substantial quantities of NO2 are removed from the gas phase by either 12-tungstophosphoric acid (HPW) or 12-tungstosilicic acid (HSiW). Part of the NO2 is converted to HNO3 which is desorbed, while the remainder is retained on the catalyst. 12-Molybdophosphoric acid (HPMo) sorbs relatively small quantities of NO2, and the aforementioned processes observed with the more acidic HPW and HSiW do not occur to any appreciable extent with HPMo. The quantity of NO2 retained on HPW or HSiW at 150° corresponds, at least approx., to the total number of protons on and in the solid. At 500-600°, the aforementioned process is reversed and NO2 is desorbed from the catalyst. Although NO is not sorbed on any of the heteropoly acids studied, after prior sorption of NO2 on HPW and HSiW significant quantities of NO are sorbed. The previously sorbed NO2 facilitates the formation of N2O3 on addition of NO. NO2 which is retained on the catalyst apparently assocs. with H+ as HNO2+.
CC 59-4 (Air **Pollution** and Industrial Hygiene)
IT **1343-93-7**, 12-Tungstophosphoric acid **12026-57-2**, 12-Molybdophosphoric acid **12027-38-2**, 12-Tungstosilicic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(sorption and reaction of NO and NO2 on metal-oxygen-cluster compds. (heteropoly **oxometalates**))
IT **1343-93-7**, 12-Tungstophosphoric acid **12026-57-2**, 12-Molybdophosphoric acid **12027-38-2**, 12-Tungstosilicic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(sorption and reaction of NO and NO2 on metal-oxygen-cluster compds. (heteropoly **oxometalates**))
RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

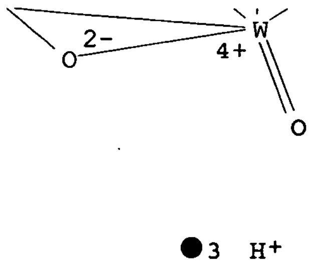
PAGE 1-A



PAGE 2-A



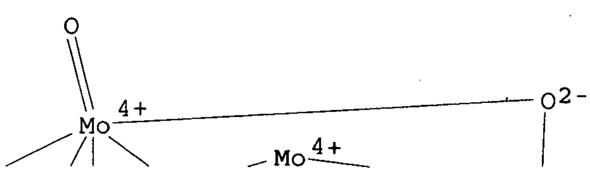
PAGE 3-A



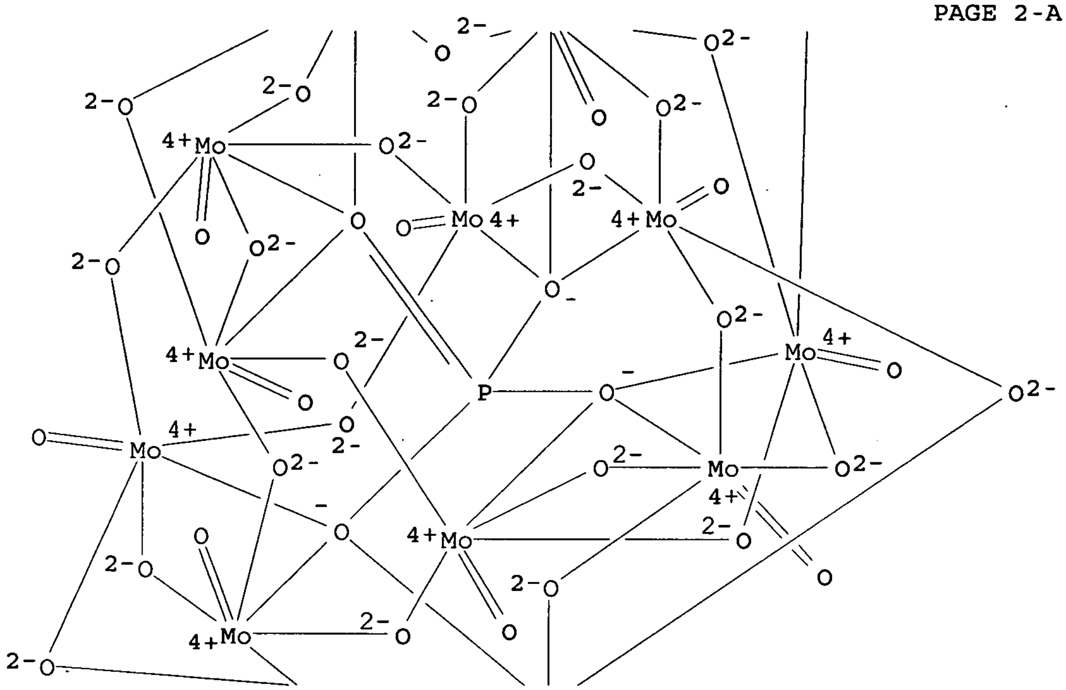
RN 12026-57-2 HCAPLUS

CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

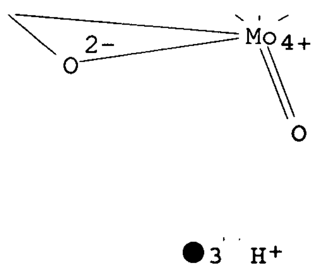
PAGE 1-A



PAGE 2-A

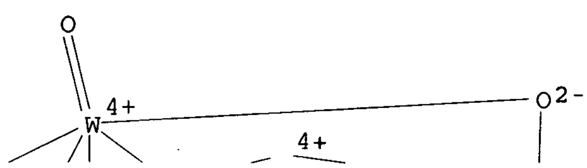


PAGE 3-A

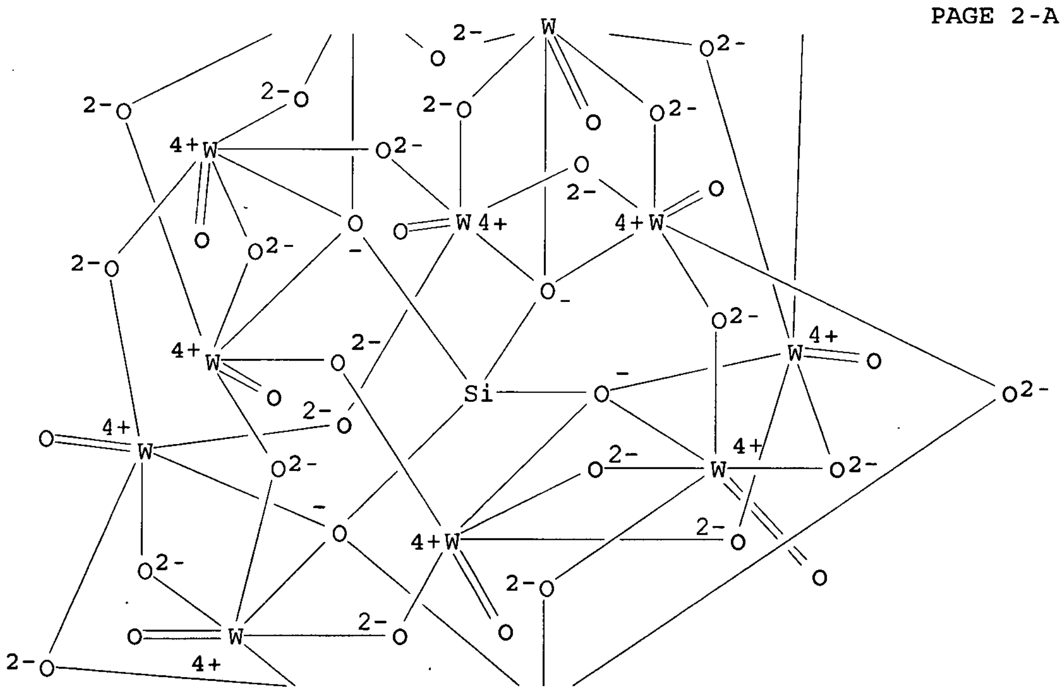


RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

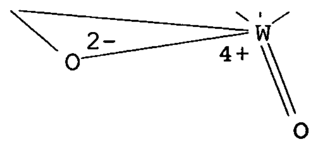
PAGE 1-A



PAGE 2-A



PAGE 3-A

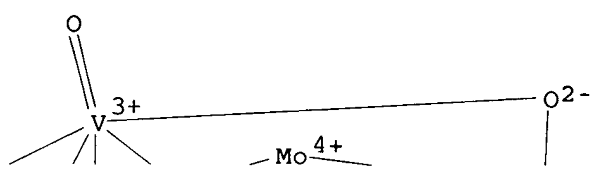


●4 H^+

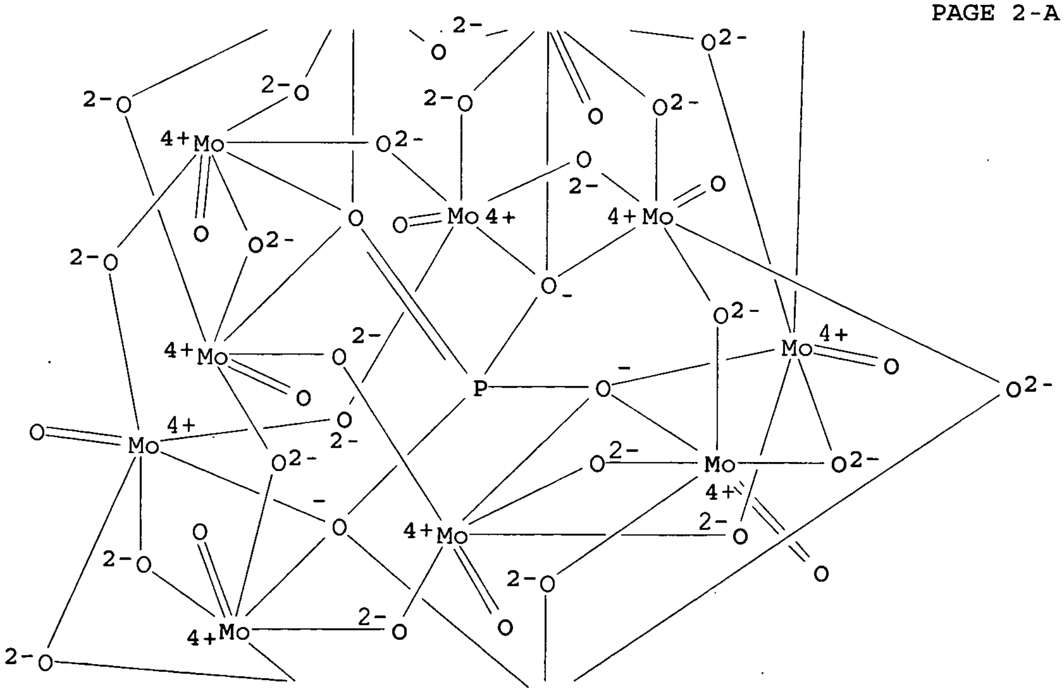
RE.CNT 78 THERE ARE 78 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 58 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:737390 HCAPLUS
DN 126:89596
TI Heteropoly acids as oxidation catalysts in synthesis of K-vitamins
AU Matveev, K. I.; Odyakov, V. F.; Zhizhina, E. G.
CS Boreskov Institute of Catalysis, Novosibirsk, 630090, Russia
SO Journal of Molecular Catalysis A: Chemical (**1996**), 114(1-3), 151-160
CODEN: JMCCF2; ISSN: 1381-1169
PB Elsevier
DT Journal
LA English
AB Mo-V-phosphoric heteropoly acids of the Keggin structure H3+nPMo12-nVnO40 (HPA-n) and their acidic salts were found to be efficient catalysts for 2-methyl-1-naphthol (MN) oxidation by dioxygen to 2-methyl-1,4-naphthoquinone (menadione, or vitamin K3). The reaction occurs in two steps, i.e., HPA-n reduction by MN followed by the product isolation and HPA-n regeneration by dioxygen. For the reaction MN + HPA-n, carried out in a two-phase aqueous organic solvent system, the effect of the HPA-n **composition** and reaction conditions on the HPA-n selectivity and activity were studied. The reaction mechanism and methods of increasing the catalyst selectivity are suggested. The reaction has been used in a new environmentally harmless technol. for producing the K-group vitamins.
CC 30-40 (Terpenes and Terpenoids)
IT **12293-15-1 12293-21-9 12293-24-2**
54327-43-4 140445-61-0 170503-64-7 170503-65-8 185608-41-7
185608-42-8 185608-43-9 185608-44-0 185608-45-1 185608-46-2
185608-49-5 185671-05-0 185671-11-8
RL: **CAT (Catalyst use)**; USES (Uses)
(**heteropoly** acids as oxidation catalysts in synthesis of K vitamins)
IT **12293-15-1 12293-21-9 12293-24-2**
54327-43-4
RL: **CAT (Catalyst use)**; USES (Uses)
(**heteropoly** acids as oxidation catalysts in synthesis of K vitamins)
RN 12293-15-1 HCAPLUS
CN Vanadate(4-), (eicosa-μ-oxoundecaoxoundecamolybdate)tetra-μ-oxooxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO
':κO':κO'':κO'':κO'':κO''':κO''':.kapp
a.O''']]-, tetrahydrogen (9CI) (CA INDEX NAME)

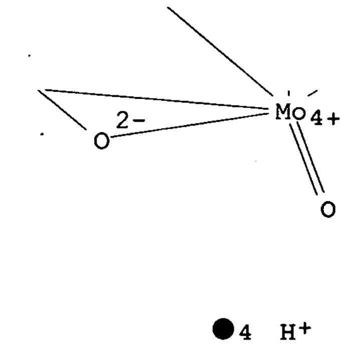
PAGE 1-A



PAGE 2-A

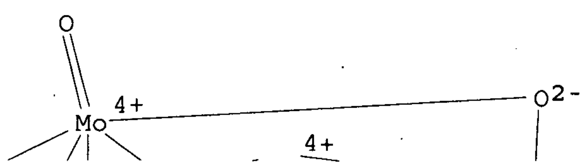


PAGE 3-A

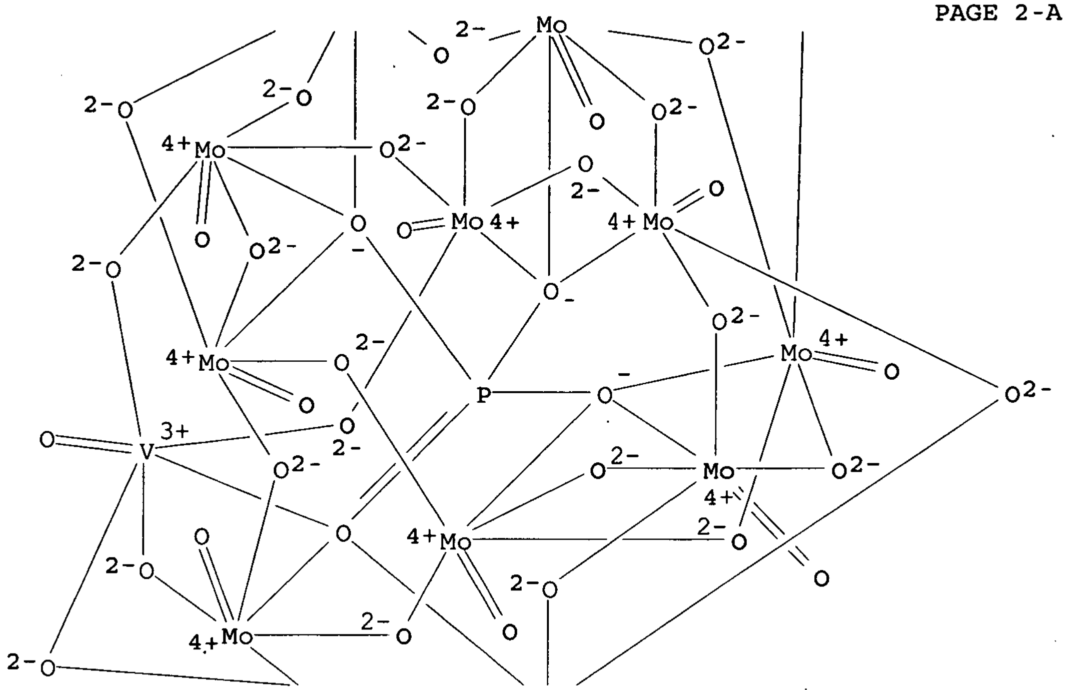


RN 12293-21-9 HCAPLUS
CN Vanadate(5-), (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':.kappa.O''']]di-, pentahydrogen (9CI) (CA INDEX NAME)

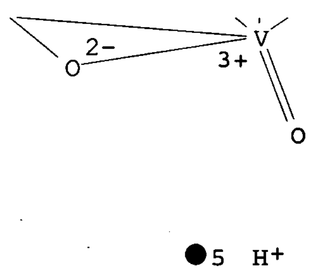
PAGE 1-A



PAGE 2-A

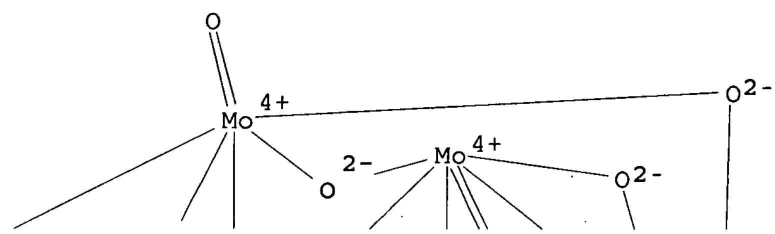


PAGE 3-A

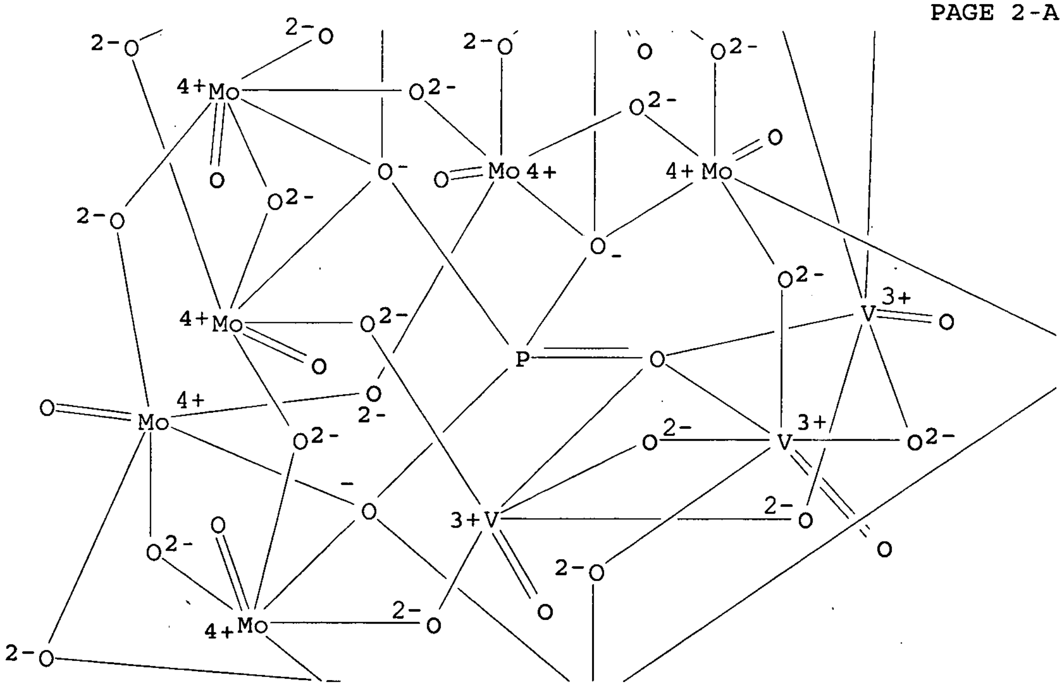


RN 12293-24-2 HCAPLUS
CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxononaoxononamolybdate) [μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tri-, hexahydrogen (9CI) (CA INDEX NAME)

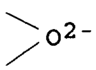
PAGE 1-A



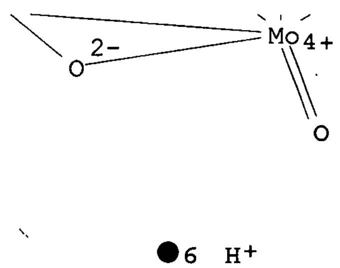
PAGE 2-A



PAGE 2-B

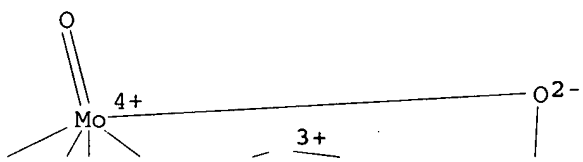


PAGE 3-A

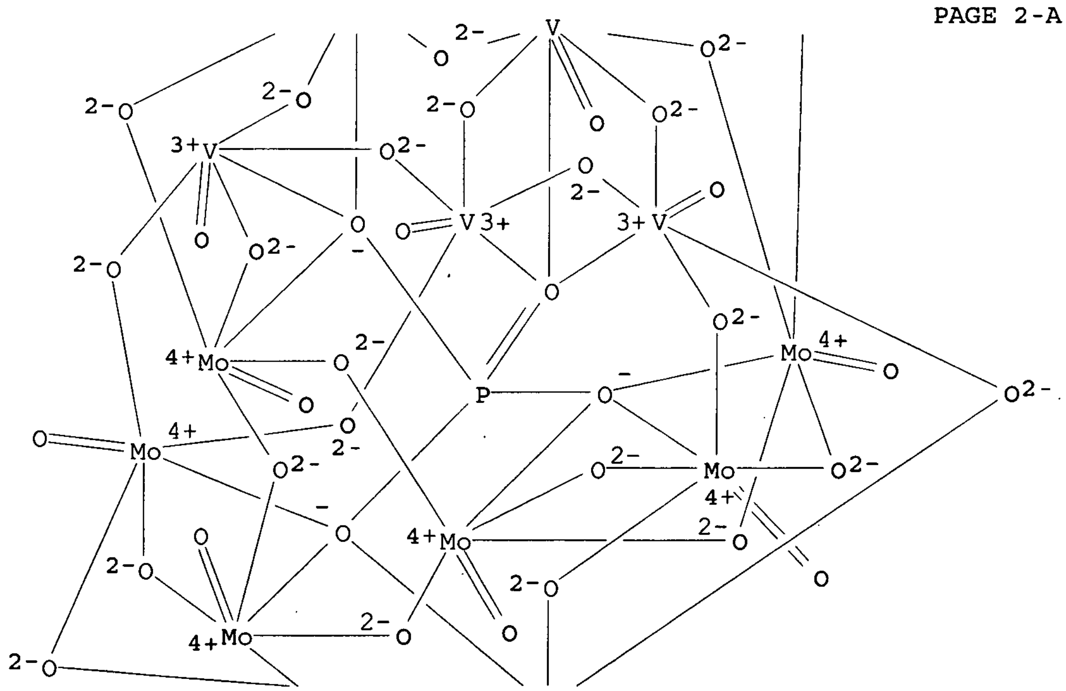


RN 54327-43-4 HCAPLUS
CN Vanadate(7-), (dodeca-μ-oxooctaoxooctamolybdate)dodeca-μ-oxotetraoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':κO''']]tetra-, heptahydrogen (9CI) (CA INDEX NAME)

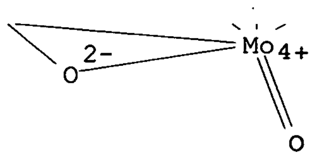
PAGE 1-A



PAGE 2-A



PAGE 3-A



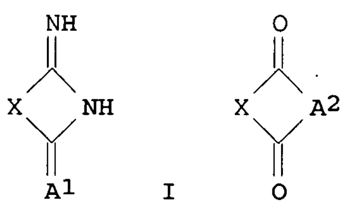
●7 H+

RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 59 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:595960 HCAPLUS
DN 125:247607
TI Preparation of imino compounds using heteropolymolybdenum acids as catalysts
IN Oonishi, Kazuhiro; Komya, Kyosuke
PA Asahi Chemical Ind, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08188572	A2	19960723	JP 1995-1966	19950110 <--
PRAI	JP 1995-1966		19950110 <--		

OS MARPAT 125:247607
GI



I II

AB The title compds. (I; A1 = O, NH; X = aryl, heterocycle), useful as heat-sensitive coloring materials and intermediates for pigments, are prepared I are prepared in high yield efficiently by reaction of II (A2 = A1, X is same as above) with NH_3 or $CO(NH_2)_2$ in the presence of heteropoly acids containing Mo. Thus, phthalic anhydride was intermittently added to a solution of $CO(NH_2)_2$, $(NH_4)_2MoO_4.4H_2O$, and NH_4NO_3 in $C_6H_5NO_2$, and reacted at 170° to give 59.6% 1,3-diiminoisoindoline and 35.1% 3-iminoisoindoline.
IC ICM C07D209-46
ICS B01J021-06; B01J023-28; B01J027-19; C07D209-50; C07D487-04
ICA C07B061-00
CC 27-7 (Heterocyclic Compounds (One Hetero Atom))
IT **12026-57-2**, 12-Molybdophosphoric acid **12027-12-2**,
12-Molybdosilicic acid 12027-67-7, Ammonium molybdate

RL: **CAT (Catalyst use)**; USES (Uses)
(synthesis of imino compds. using **heteropolymolybdenum** acids as catalysts)

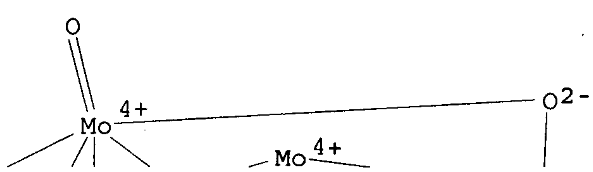
IT 57-13-6, Urea, reactions 85-44-9, Phthalic anhydride 117-08-8, Tetrachlorophthalic anhydride 6484-52-2, Ammonium **nitrate**, reactions 12125-02-9, Ammonium chloride, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(synthesis of imino compds. using heteropolymolybdenum acids as catalysts)

IT **12026-57-2**, 12-Molybdophosphoric acid **12027-12-2**, 12-Molybdosilicic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(synthesis of imino compds. using **heteropolymolybdenum** acids as catalysts)

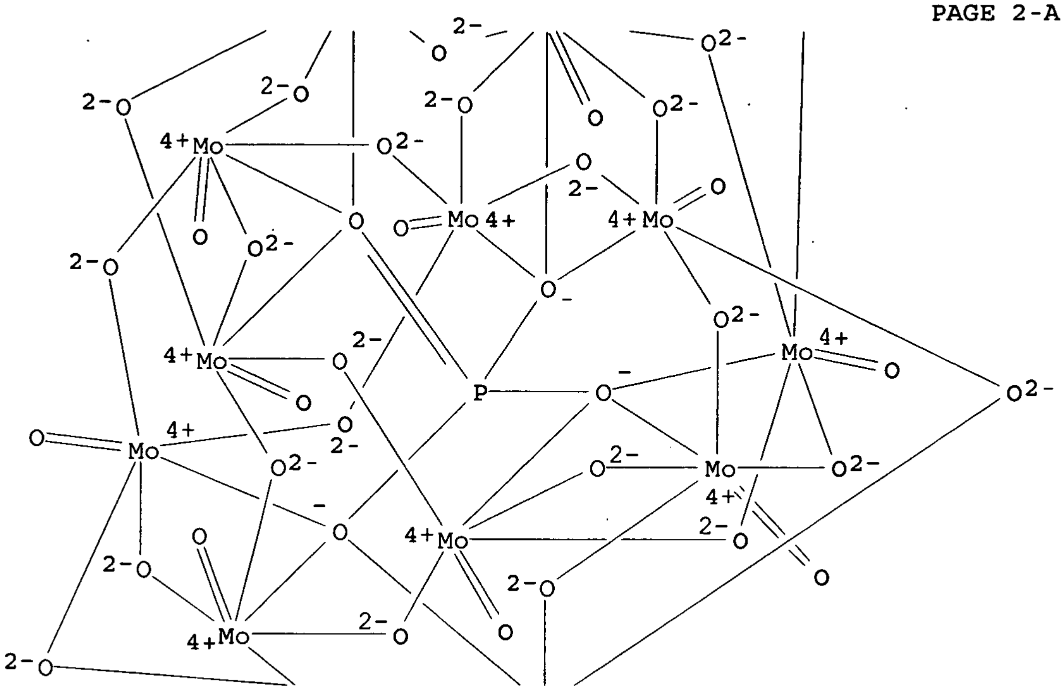
RN 12026-57-2 HCAPLUS

CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

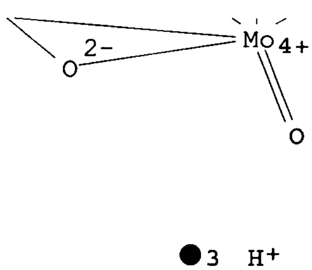
PAGE 1-A



PAGE 2-A

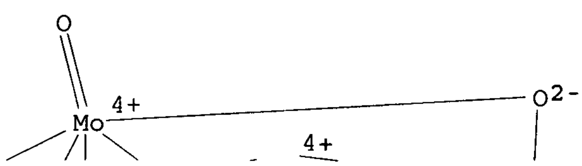


PAGE 3-A



RN 12027-12-2 HCAPLUS
CN Molybdate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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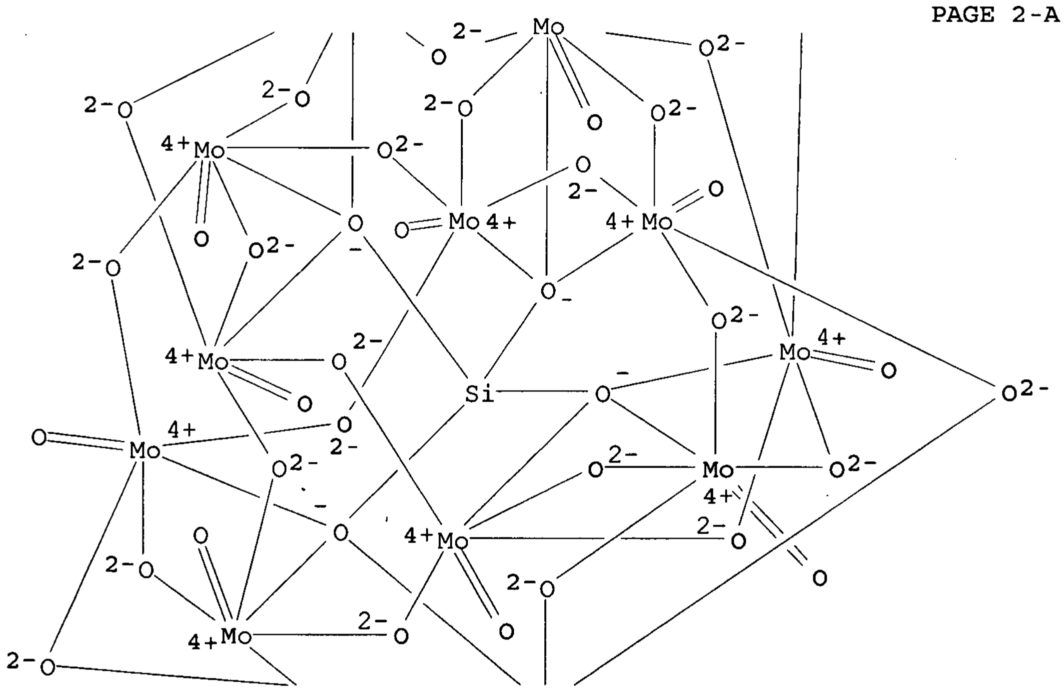

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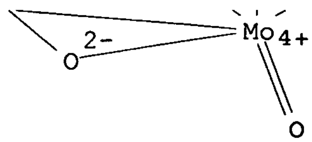
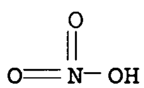


●4 H^+

L32 ANSWER 60 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:544575 HCAPLUS
DN 125:275077
TI Catalytic properties of heteropoly complexes containing Fe(III) ions in benzene oxidation by hydrogen peroxide
AU Kuznetsova, L. I.; Detusheva, L. G.; Fedotov, M. A.; Likholobov, V. A.
CS Boreskov Institute of Catalysis, pr. Akademika Lavrentieva 5, Novosibirsk, 630090, Russia
SO Journal of Molecular Catalysis A: Chemical (**1996**), 111(1-2), 81-90
CODEN: JMCCF2; ISSN: 1381-1169
PB Elsevier
DT Journal
LA English
AB Elemental anal., magnetic measurements, IR, 31P NMR, and UV-VIS spectroscopy were used to study heteropoly complexes (HPC), containing Fe(III) ions and heteropoly anion [PW11O 39]7-, isolated from aqueous solns. as tetrabutylammonium (TBA) salts and dissolved in acetonitrile. The complexes identified are: Fe(III)-substituted complexes [PW11O39Fe(H2O)] 4- (1) and [PW11O39Fe(SO4)]6- (1'); Fe(III)-substituted hydroxo complex [PW11O39 Fe(OH)]5- (2') formed during the precipitation of binuclear μ-oxo complex [(PW11O39Fe)2O]10- (2) from aqueous solns. (pH = 3÷5) by TBA cations; polynuclear Fe(III)- hydroxo complexes [PW11O39FenOxHy]m- (3) (n.apprx.8). The catalytic activity of complexes both in the hydrogen peroxide decomposition and benzene oxidation in a one-phase system HPC+CH3CN+H2O2(aq)+C6H6, with [HPC] = 6·10-3 , [H2O2] = 0.175÷1.6, and [C6H6] = 1.4÷5.6 M at 70°C have been studied. In the presence of 1 or 1', the molar ratio between phenol formed and H2O2 decomposed equals 10-20%. HPC containing SO42- ions shows a far lower activity in both reactions. The kinetics of PhOH accumulation conforms to the chain mechanism of H2O2 decomposition Benzene is oxidized by OH radicals coordinated to HPC. In the presence of complex 2' the rate of H2O2 decomposition is considerably lower. Thus the molar ratio of phenol formed and H2O2 decomposed is almost 60%. The mechanism of H2O2 activation by 2' includes most likely the initial formation of a peroxo complex which was observed in absorption spectra. The state of HPC affected by the reaction mixture components was studied by UV-VIS spectra. The products of one-electron phenol (or pyrocatechol) oxidation inhibit the catalytic activity due to the complex formation with Fe(III) ions in HPC.
CC 22-7 (Physical Organic Chemistry)
IT **10421-48-4D**, Ferric **nitrate**, reaction products with sodium tungstophosphate **87261-30-1D**, reaction products with ferric **nitrate** **94772-23-3** **182413-46-3** **182413-48-5** **182413-49-6**
RL: **CAT (Catalyst use)**; USES (Uses)
(benzene oxidation by hydrogen peroxide in presence of iron containing

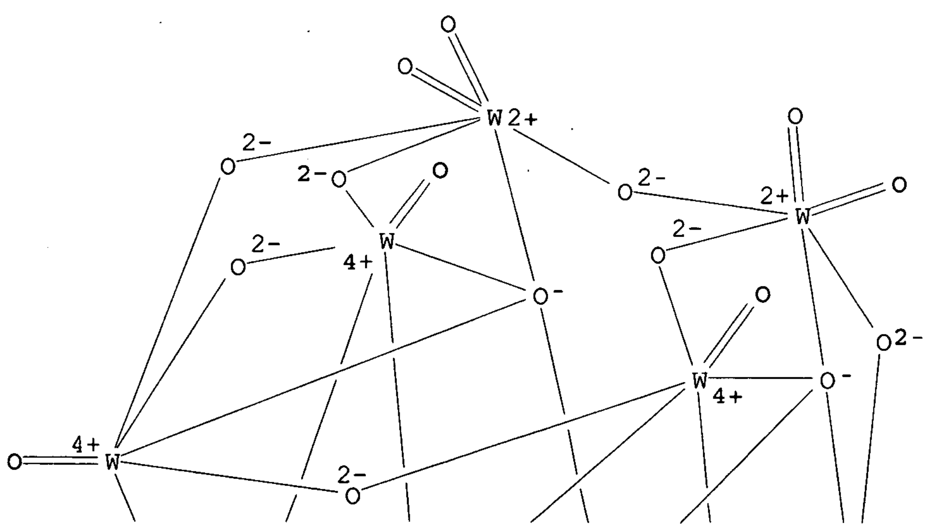
tungstophosphoric **heteropoly** acid catalysts)
IT 10028-22-5, Ferric sulfate **10421-48-4**, Ferric **nitrate**
87261-30-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(for preparation of ferrotungstophosphates)
IT **10421-48-4D**, Ferric **nitrate**, reaction products with
sodium tungstophosphate **87261-30-1D**, reaction products with
ferric **nitrate** **94772-23-3** **182413-46-3**
182413-48-5 **182413-49-6**
RL: **CAT (Catalyst use)**; USES (Uses)
(benzene oxidation by hydrogen peroxide in presence of iron containing
tungstophosphoric **heteropoly** acid catalysts)
RN 10421-48-4 HCAPLUS
CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)



●1/3 Fe(III)

RN 87261-30-1 HCAPLUS
CN Tungstate(7-), eicosa-μ-oxopentadecaoxo[μ11-[phosphato(3-)-
κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''']]undeca-, heptasodium (9CI) (CA
INDEX NAME)

PAGE 1-A



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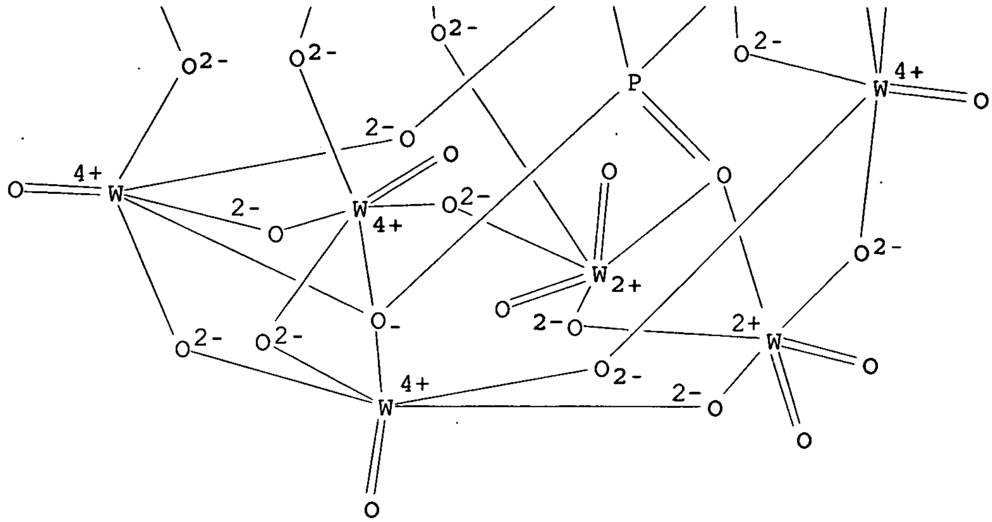

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● 7 Na^{+}

RN 94772-23-3 HCAPLUS
CN 1-Butanaminium, N,N,N-tributyl-, (aquaferrate)tetracosa-μ-oxoundecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa.O':κO':κO'':κO'':κO'':κO''':κO''':κO''']]undecatungstate(4-) (4:1) (9CI) (CA INDEX NAME)

CM 1

CRN 94772-22-2
CMF Fe H2 O40 P W11
CCI CCS

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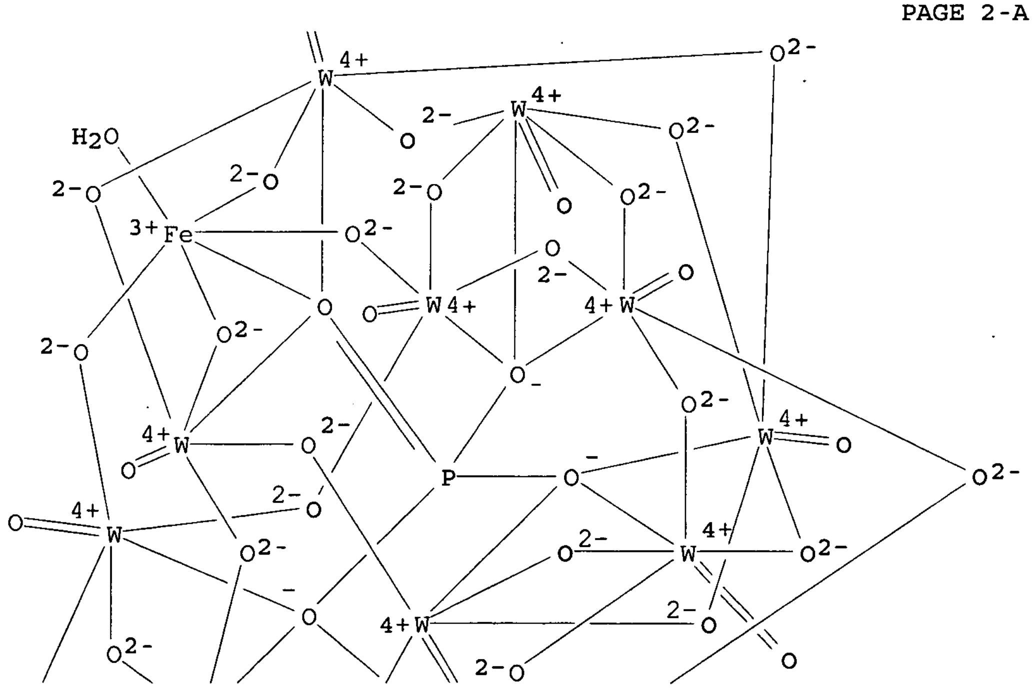
PAGE 2-A



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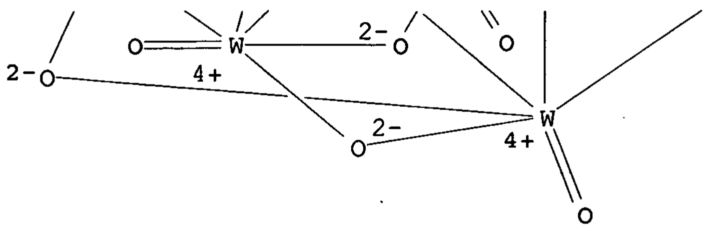
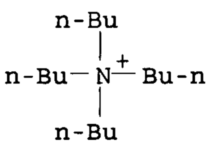


CM 2

CRN 10549-76-5
CMF C16 H36 N



RN 182413-46-3 HCAPLUS
CN 1-Butanaminium, N,N,N-tributyl-, tetracosa-μ-oxoundecaoxo[μ12-[phosphato(3-)-O:O:O:O':O':O':O'':O'':O'':O''':O''':O''']][[sulfato(2-)-O]ferrate]undecatungstate(6-) (6:1) (9CI) (CA INDEX NAME)

CM 1

CRN 182413-45-2
CMF Fe O43 P S W11
CCI CCS

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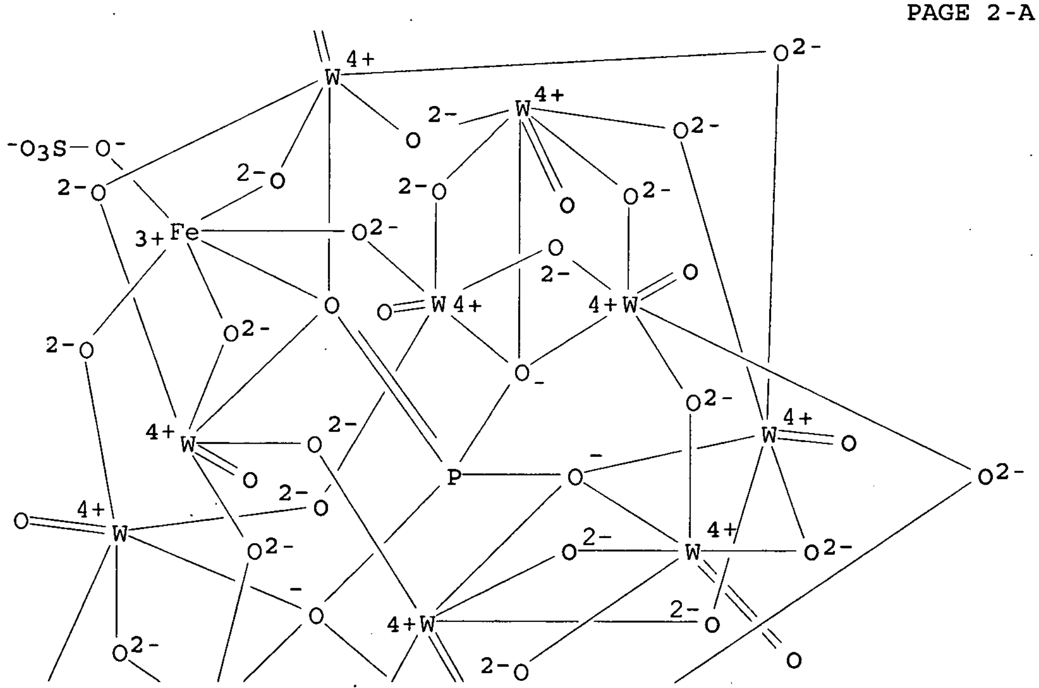

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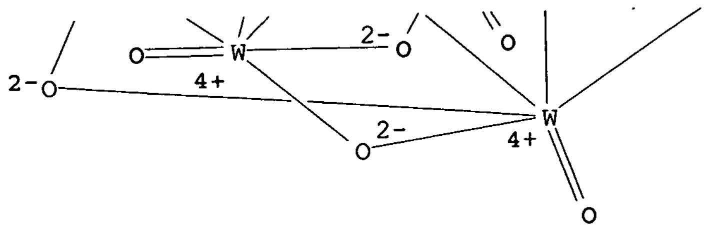
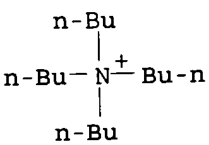


CM 2

CRN 10549-76-5
CMF C16 H36 N



RN 182413-48-5 HCAPLUS
CN 1-Butanaminium, N,N,N-tributyl-, octatetraconta-μ-oxodocosaoxo(μ-oxodiferrate)bis[μ12-[phosphato(3-)-O:O:O:O':O':O':O'':O'':O'':O''':O''':O''']]docosatungstate(10-) (10:1) (9CI) (CA INDEX NAME)

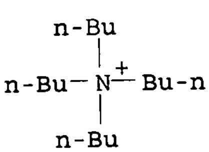
CM 1

CRN 182413-47-4
CMF Fe2 O79 P2 W22
CCI CCS

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 10549-76-5
CMF C16 H36 N



RN 182413-49-6 HCAPLUS
CN 1-Butanaminium, N,N,N-tributyl-, (hydroxyferrate)tetracosa-μ-oxoundecaoxo[μ12-[phosphato(3-)-O:O:O:O':O':O':O'':O'':O'':O''':O''':O''']]undecatungstate(5-) (5:1) (9CI) (CA INDEX NAME)

CM 1

CRN 145238-79-5

CMF Fe H O40 P W11
CCI CCS

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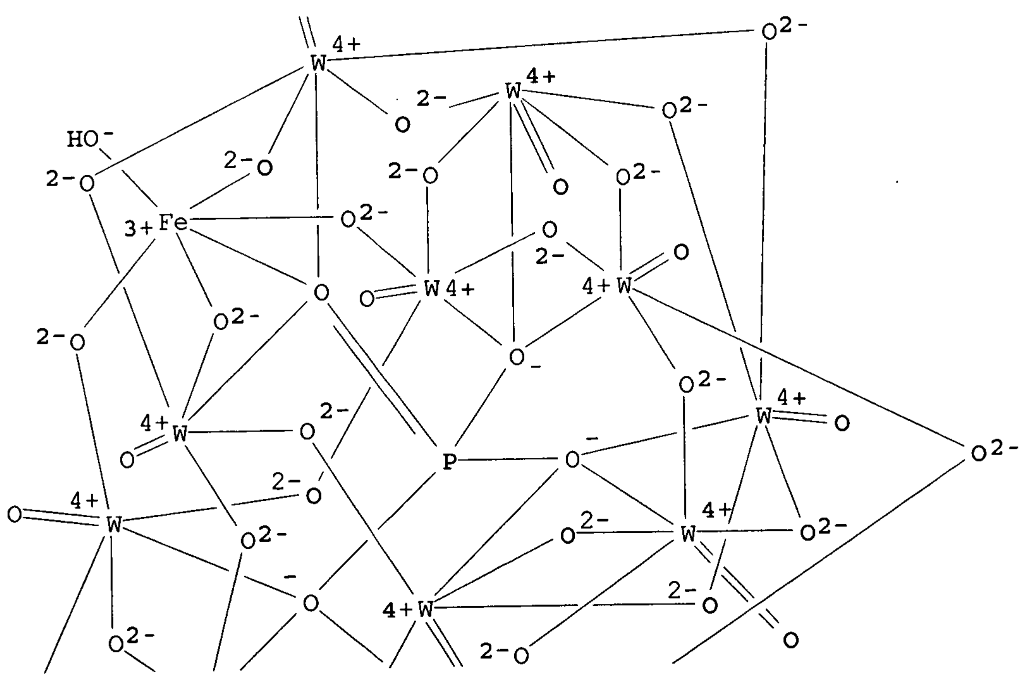

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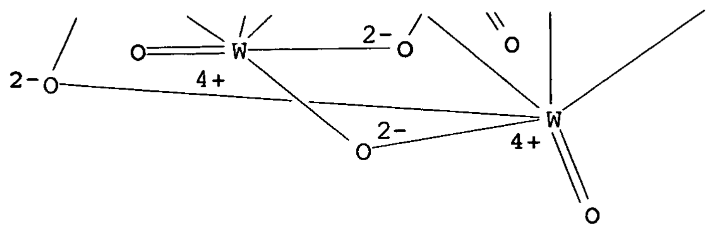
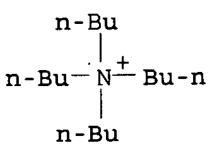
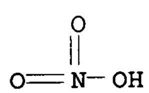


CM 2

CRN 10549-76-5
CMF C16 H36 N



IT **10421-48-4**, Ferric **nitrate**
RL: RCT (Reactant); RACT (Reactant or reagent)
(for preparation of ferrotungstophosphates)
RN 10421-48-4 HCAPLUS
CN Nitric acid, iron(3+) salt (8CI, 9CI) (CA INDEX NAME)



●1/3 Fe(III)

L32 ANSWER 61 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:463013 HCAPLUS
DN 125:247242
TI Catalytic oxidation of cyclohexene with molecular oxygen by polyoxometalate-intercalated hydrotalcites
AU Guo, Jun; Jiao, Qing Ze; Shen, Jian Ping; Jiang, Da Zhen; Yang, Guang Hui; Min, En Ze
CS Dep. Chem., Jilin Univ., Changchun, 130023, Peop. Rep. China
SO Catalysis Letters (**1996**), 40(1,2), 43-45
CODEN: CALEER; ISSN: 1011-372X
PB Baltzer
DT Journal
LA English
AB Cyclohexene was oxidized with mol. oxygen over transition-metal-

substituted polyoxometalate-intercalated hydrotalcites to produce 2-cyclohexene-1-one and 2-cyclohexene-1-ol with high selectivity under mild reaction conditions.

CC 24-5 (Alicyclic Compounds)
Section cross-reference(s): 67

IT **81553-20-0 105785-76-0 109494-69-1**
135266-66-9
RL: **CAT (Catalyst use)**; RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(catalytic oxidation of cyclohexene with mol. oxygen by **polyoxometalate**-intercalated hydrotalcites)

IT 110-83-8, Cyclohexene, reactions 12027-46-2 12207-66-8 37194-75-5 39293-41-9 81553-16-4 125844-54-4, Aluminum magnesium hydroxide **nitrate** (AlMg3(OH)8(NO3)) 128190-31-8 135244-69-8
RL: RCT (Reactant); RACT (Reactant or reagent)
(catalytic oxidation of cyclohexene with mol. oxygen by polyoxometalate-intercalated hydrotalcites)

IT **81553-20-0 105785-76-0 109494-69-1**
135266-66-9
RL: **CAT (Catalyst use)**; RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(catalytic oxidation of cyclohexene with mol. oxygen by **polyoxometalate**-intercalated hydrotalcites)

RN 81553-20-0 HCAPLUS

CN Tungstate(5-), (aquaferrate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tetracosa-μ-oxoundecaoxoundeca-, pentapotassium (9CI) (CA INDEX NAME)

PAGE 1-A

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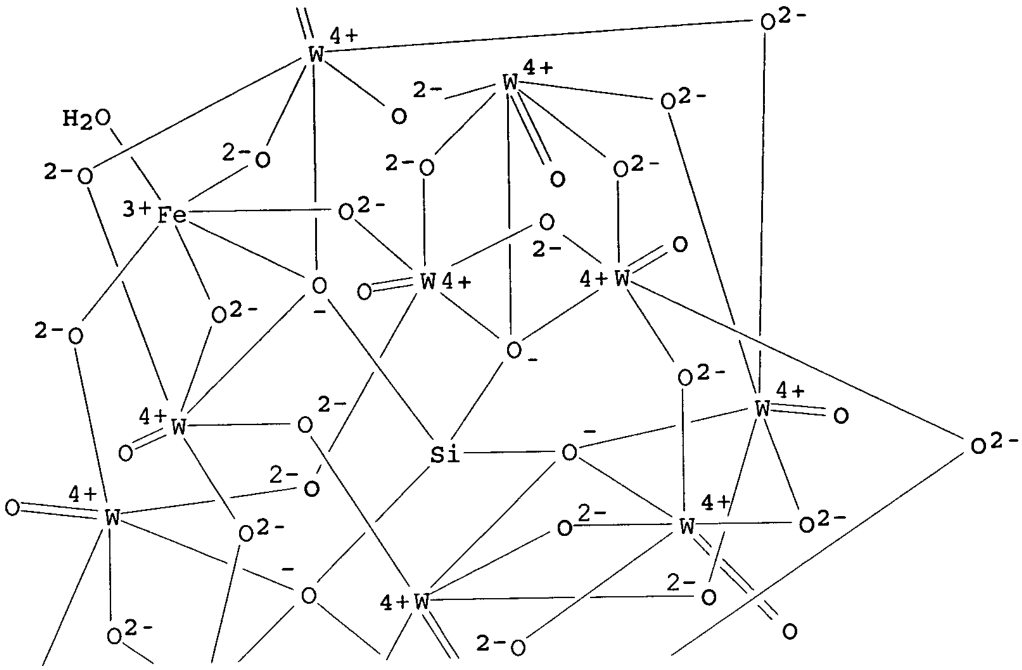

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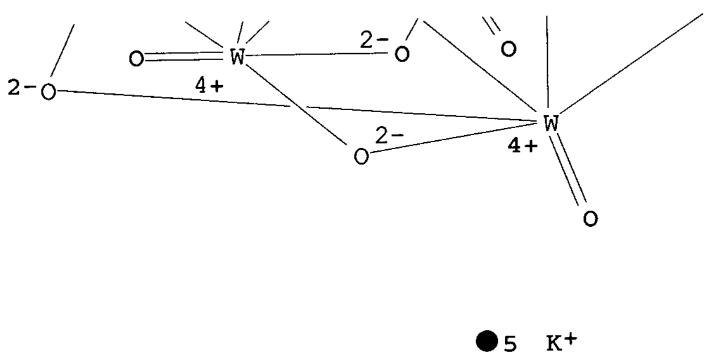
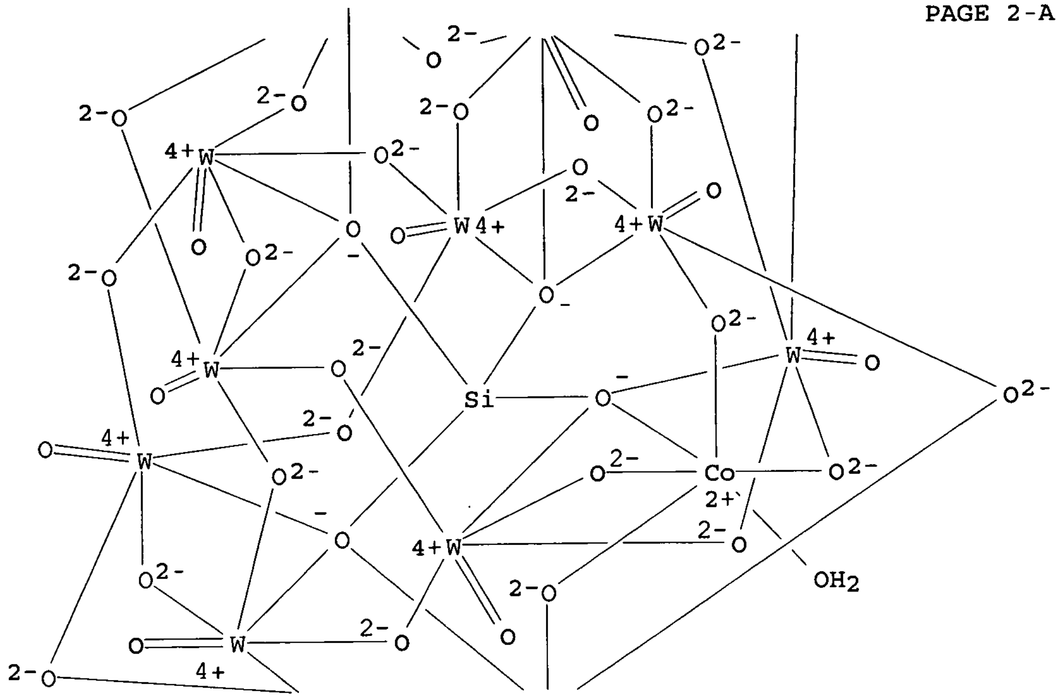


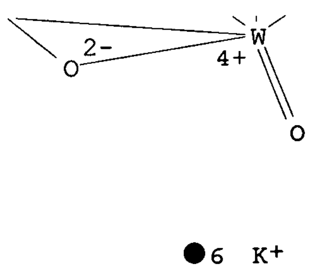
RN 105785-76-0 HCAPLUS
CN Tungstate(6-), (aquacobaltate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tetracosa-μ-oxoundecaoxoundeca-, hexapotassium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



PAGE 3-A



RN 109494-69-1 HCAPLUS
CN Tungstate(6-), (aquamanganate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tetracosa-μ-oxoundecaoxoundeca-, hexapotassium (9CI) (CA INDEX NAME)

PAGE 1-A

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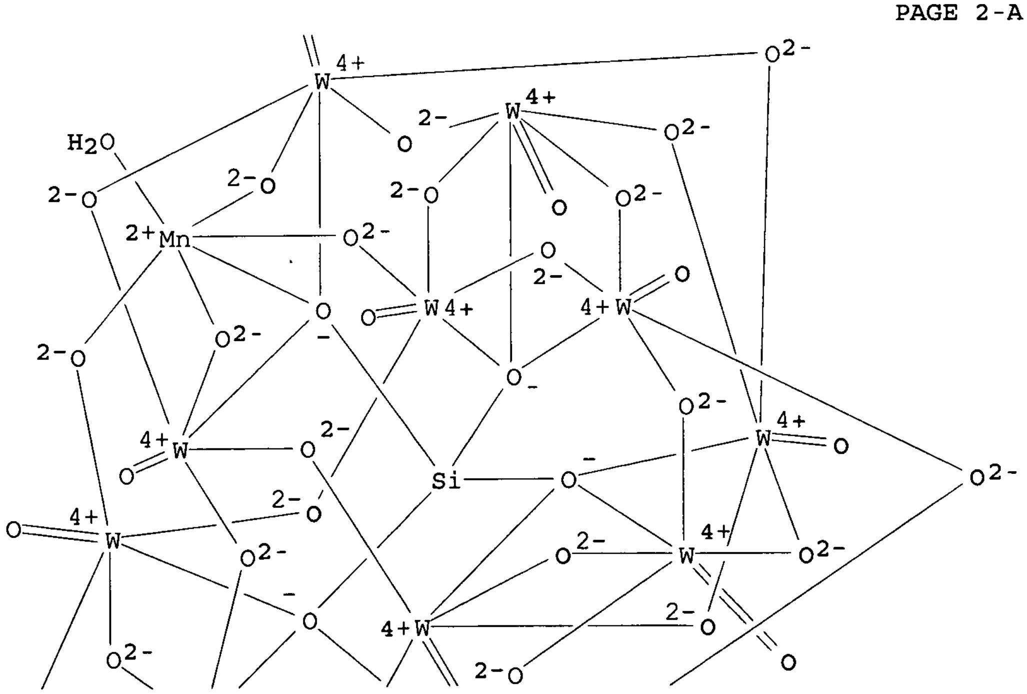
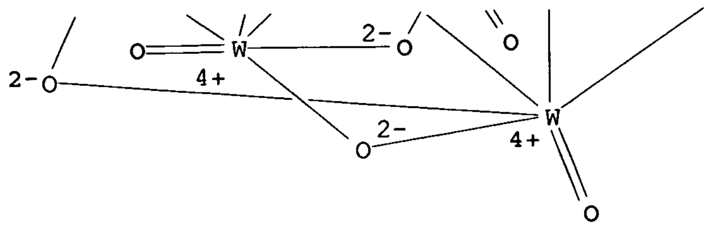


PAGE 3-A



●6 K+

RN 135266-66-9 HCAPLUS

CN Tungstate(6-), (aquacuprate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]tetracosa-μ-oxoundecaoxoundeca-, hexapotassium (9CI) (CA INDEX NAME)

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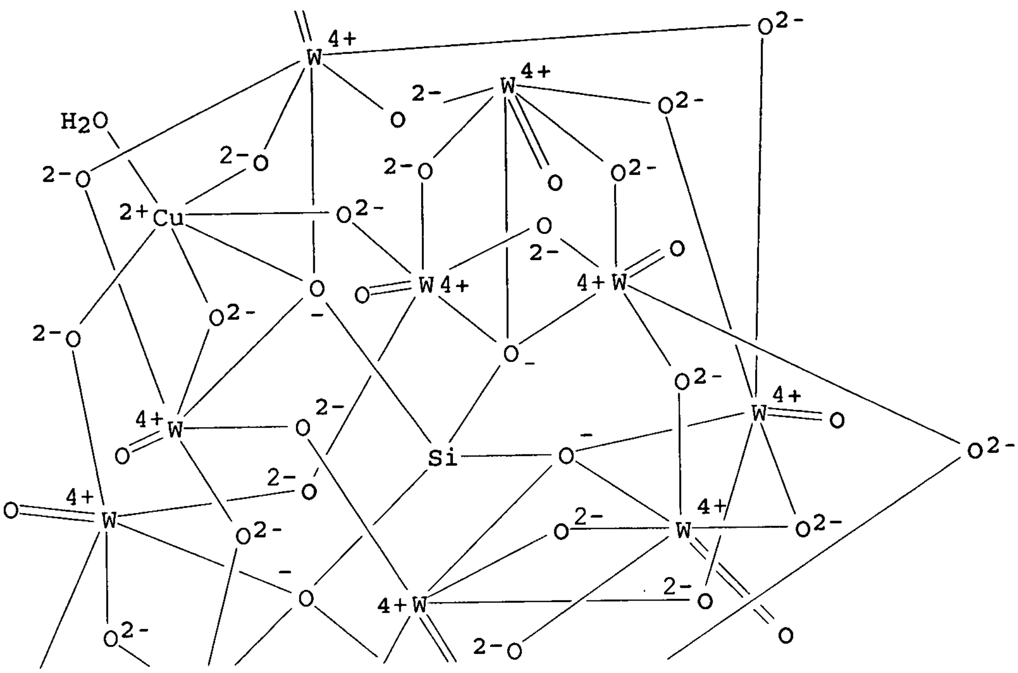

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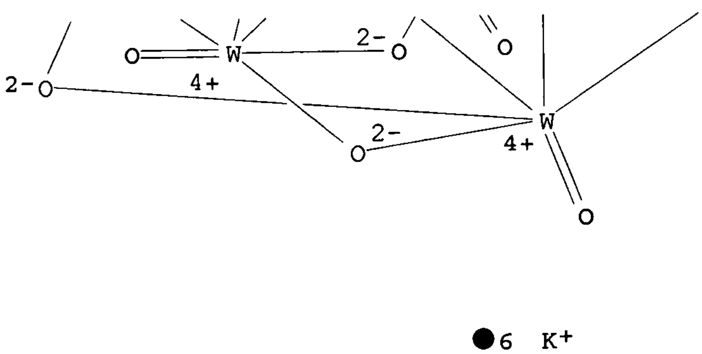

L32 ANSWER 62 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:363266 HCAPLUS
DN 125:11802
TI Removal of heteropoly compounds from polyethers, polyesters, and polyester-polyethers
IN Weyer, Hans-Juergen; Fischer, Rolf
PA BASF A.-G., Germany
SO Ger. Offen., 6 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

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PI   DE 4435934            A1    19960411    DE 1994-4435934         19941007 <--
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         RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
     EP 784643             A1    19970723    EP 1995-936452          19951006 <--
     EP 784643             B1    19980617
         R:  BE, DE, ES, FR, GB, IT, NL
     CN 1162965            A     19971022    CN 1995-196114          19951006 <--
     CN 1071344            B     20010919
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     ES 2118635            T3    19980916    ES 1995-936452          19951006 <--
     US 5741888            A     19980421    US 1997-809689          19970327 <--
PRAI DE 1994-4435934       A     19941007  <--
     WO 1995-EP3956        W     19951006  <--
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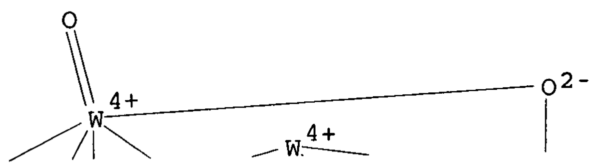
AB In mixts. of heteropoly acid or salt impurities in polyethers, polyesters, or polyester-polyethers, impurity removal is effected by first treating the polymer **composition** with an ether of low enough polarity to cause the heteropoly compound to sep. into its own phase and then removing the separated impurity. The remaining polymer phase may then be further treated with an adsorbent to give a product with very low heteropoly content. The heteropoly compds. may be polymerization catalysts capable of being recycled after the separation In an example, 100 g of polymerization product containing THF 77.3, THF homopolymer 21.2, $H_3PW_{12}O_{40}$ (I) 1.2, and water 0.3% was treated with 200 g dioctyl ether to give a polymer product with 5 ppm I, a level reduced to <1 ppm after treatment with active carbon.

IC ICM C08G085-00
   ICS C08G065-30; C08G063-90; C08J011-02
ICA C08G065-10; C08G018-48; C10M107-32; C01B031-08; B01J020-08; B01J020-04; B01J020-02; C07B063-00; C07C043-00; C07C043-04; C07D307-06
ICI C10N040-08
CC 35-7 (Chemistry of Synthetic High Polymers)
   Section cross-reference(s): 37
IT **1343-93-7**
   RL: **CAT (Catalyst use)**; REM (Removal or disposal); PROC (Process); USES (Uses)
   (removal of **heteropoly** compds. from THF homopolymer)
IT **1343-93-7**
   RL: **CAT (Catalyst use)**; REM (Removal or disposal); PROC (Process); USES (Uses)
   (removal of **heteropoly** compds. from THF homopolymer)
RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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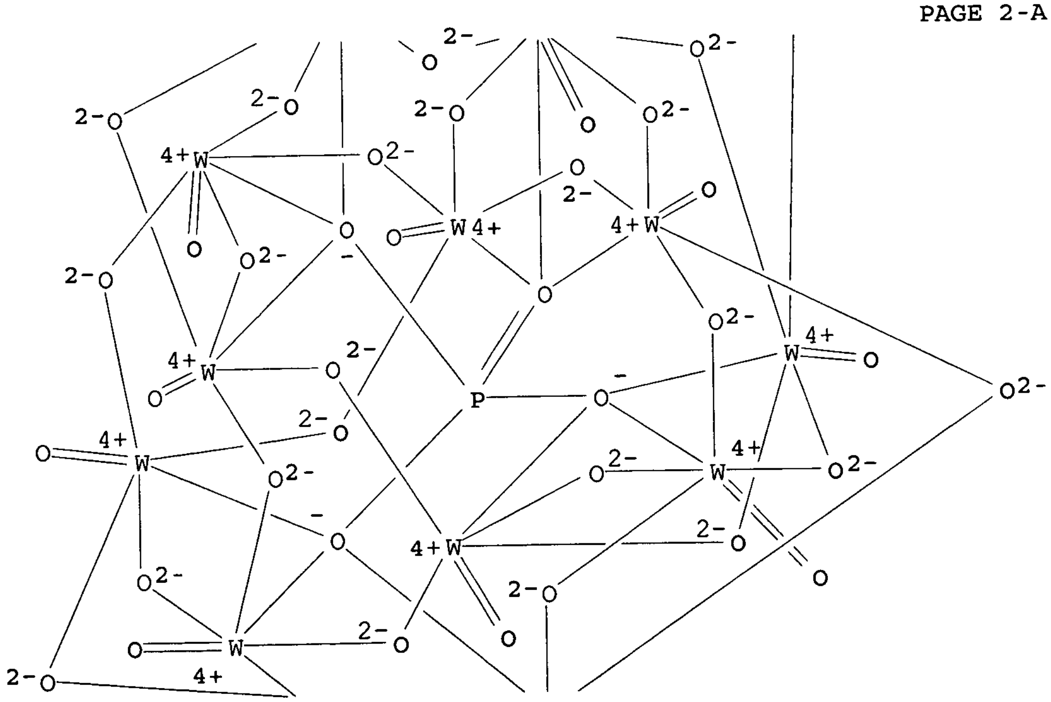

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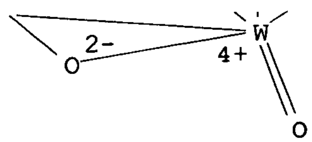

●3 H^+

L32 ANSWER 63 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:290204 HCAPLUS
DN 124:320128
TI Olefin hydration process and catalyst
IN Haining, Gordon John
PA Bp Chemicals Limited, UK
SO Eur. Pat. Appl., 13 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
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PRAI	GB 1994-19387	A	19940926	<--		
	US 1995-461435	A3	19950605	<--		

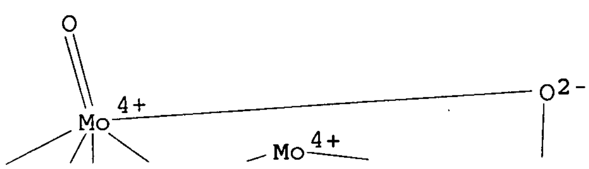
AB The process for hydrating olefins to the corresponding alcs. in a vapor phase uses a novel catalyst **composition** comprising a heteropolyacid and a siliceous support which is in the form of extrudates or pellets. By using the specific catalyst **composition**, it is possible not only to increase the space-time-yield of a process but also to prolong the life thereof, thereby reducing the frequency with which the catalyst is changed or replaced on a plant, especially in an olefin hydration process. A catalyst comprised 12-tungstophosphoric acid and silica support.
IC ICM B01J027-188
ICS C07C029-04
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 67
IT **1313-30-0 1343-93-7**, 12-Tungstophosphoric acid **12026-57-2**, 12-Molybdophosphoric acid **12027-12-2**, 12-Molybdosilicic acid **12027-38-2**, 12-Tungstosilicic acid 12027-41-7 **12263-60-4** 60646-65-3 **122795-31-7** **152514-03-9**
RL: **CAT (Catalyst use)**; USES (Uses)
(olefin hydration catalyst based on **heteropoly** acid and silica support)
IT **1313-30-0 1343-93-7**, 12-Tungstophosphoric acid **12026-57-2**, 12-Molybdophosphoric acid **12027-12-2**,

12-Molybdosilicic acid **12027-38-2**, 12-Tungstosilicic acid
12263-60-4 122795-31-7 152514-03-9
RL: **CAT (Catalyst use)**; USES (Uses)
(olefin hydration catalyst based on **heteropoly** acid and
silica support)

RN 1313-30-0 HCAPLUS

CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-
κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trisodium
(9CI) (CA INDEX NAME)

PAGE 1-A



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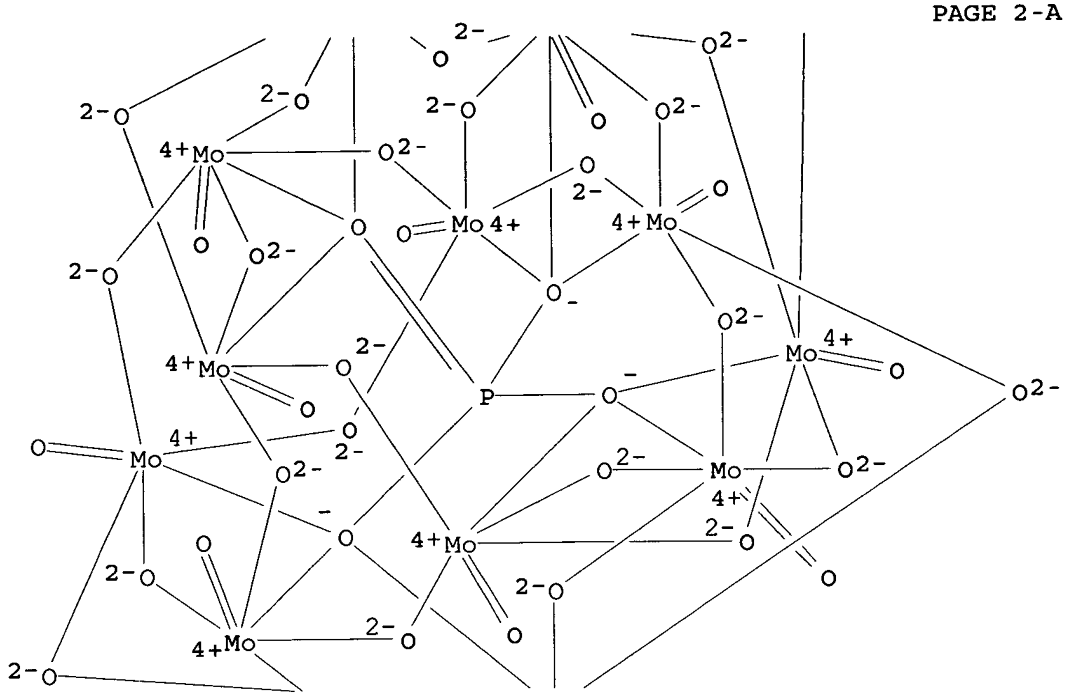

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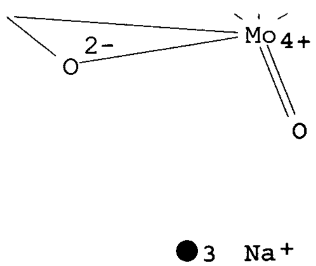
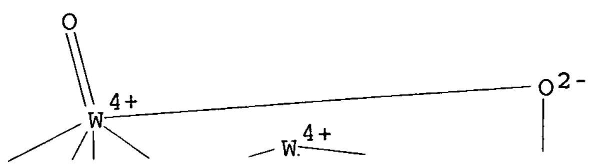


RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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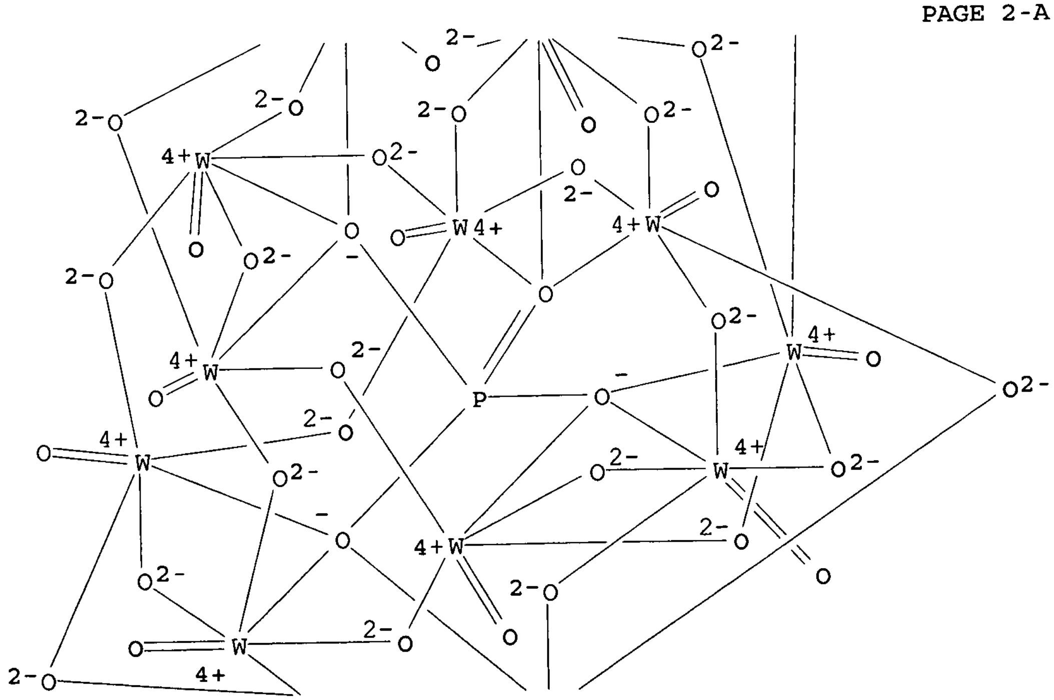

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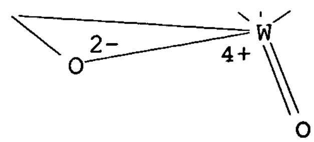
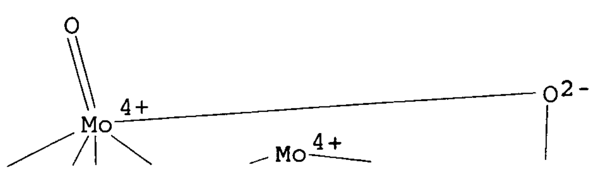


● 3 H^+

RN 12026-57-2 HCAPLUS

CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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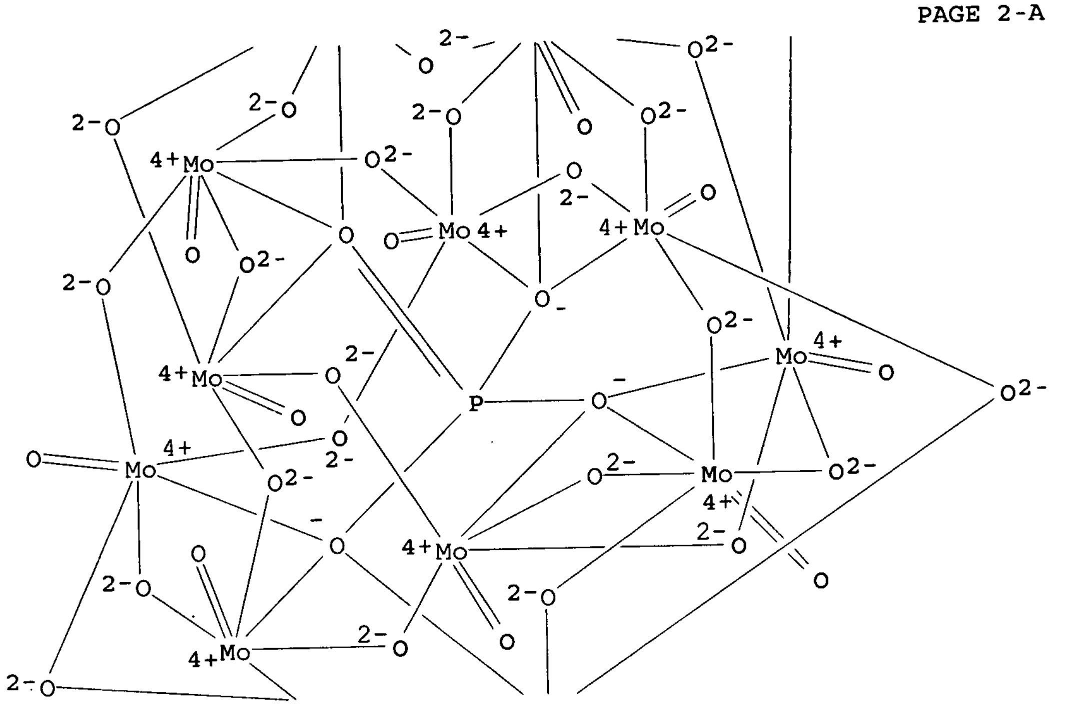

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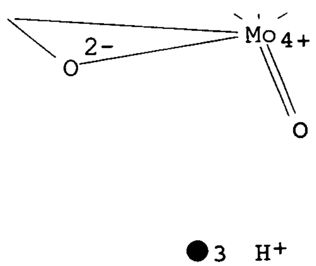
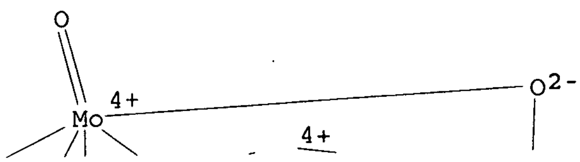


RN 12027-12-2 HCAPLUS
CN Molybdate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kappa.O':κO':κO':κO'':κO'':κO'':κO''':.kappa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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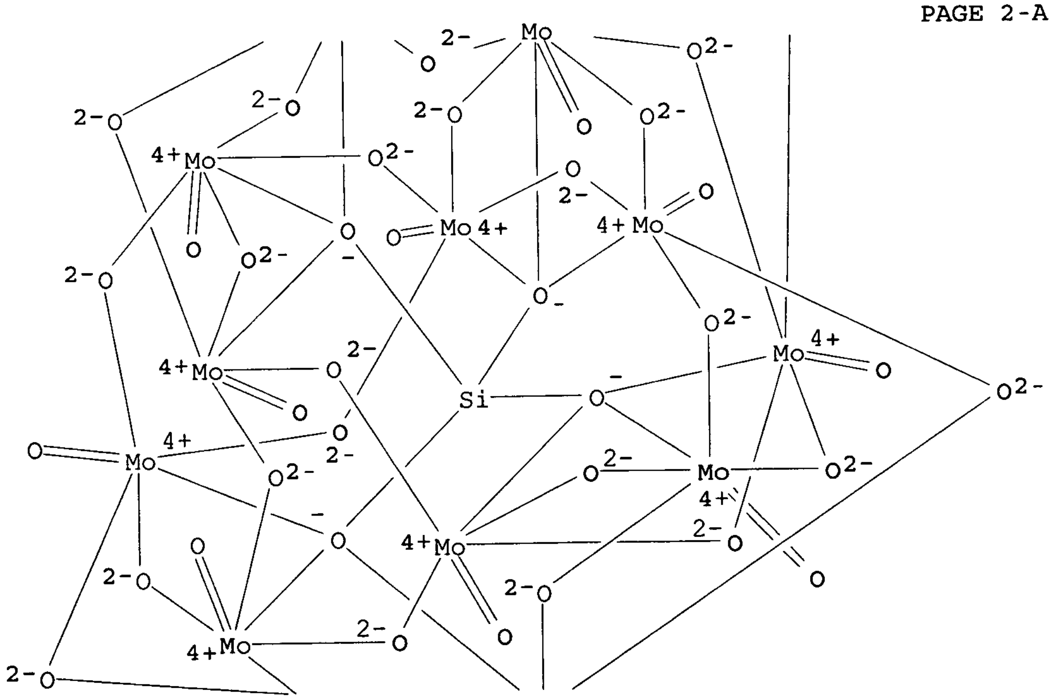

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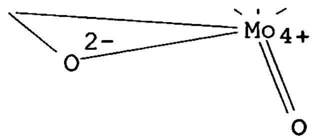
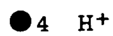
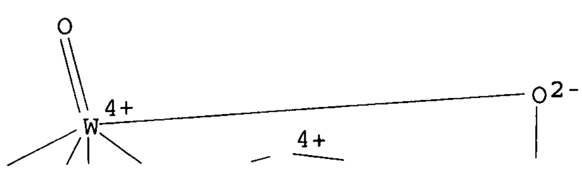




RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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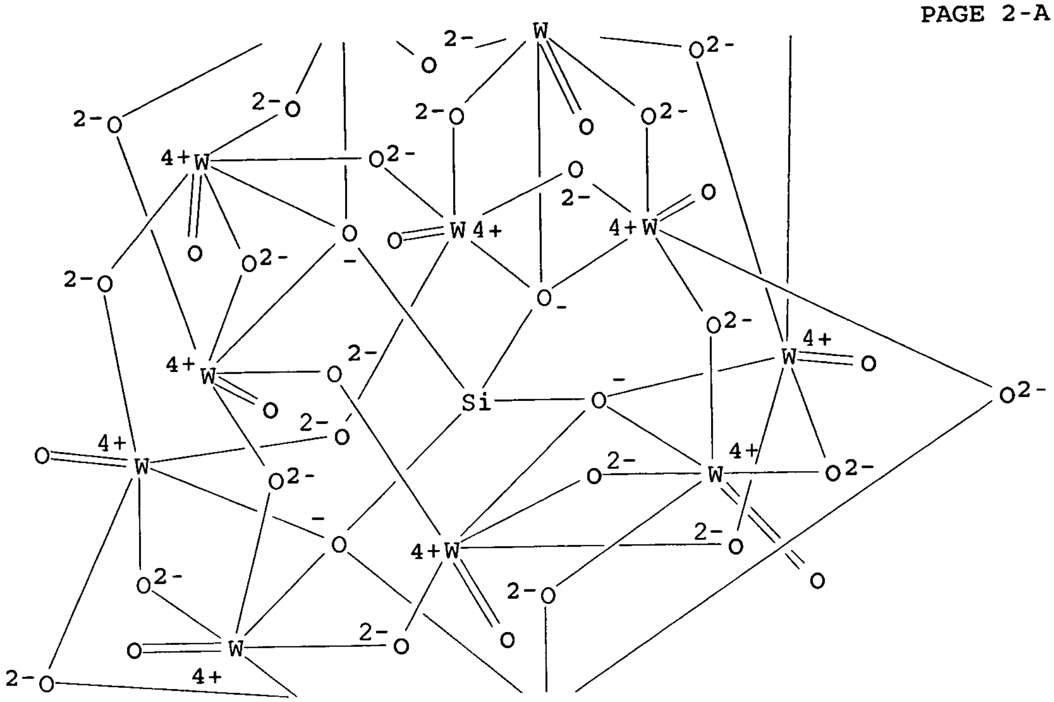

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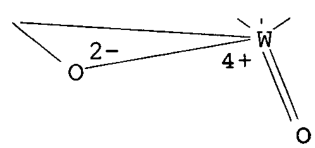


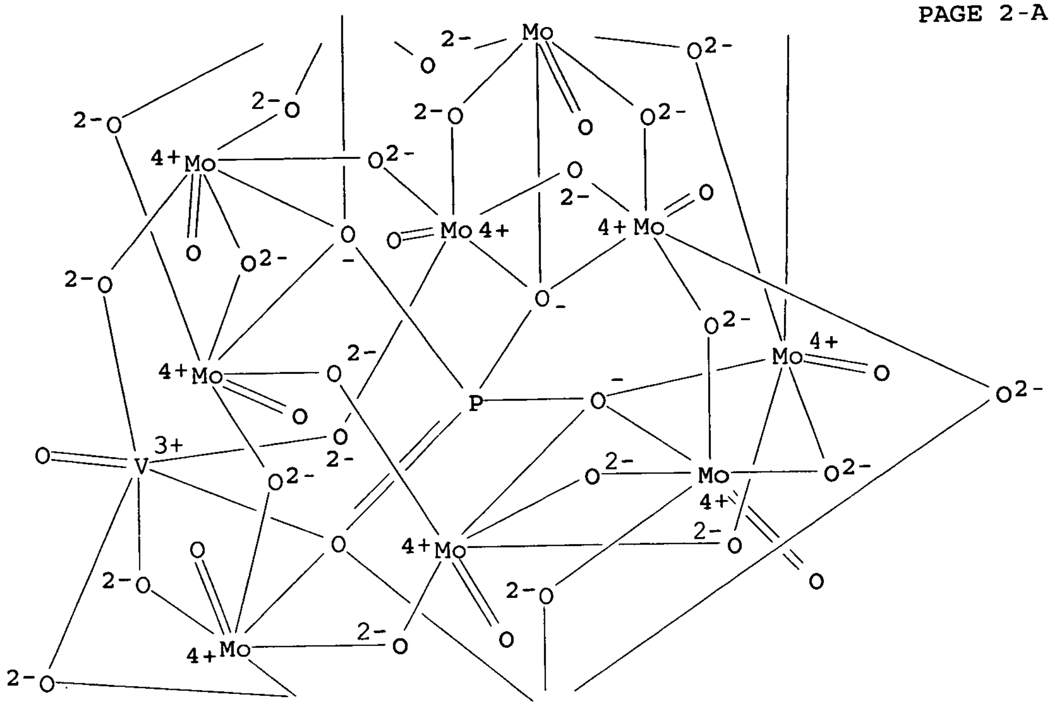
●4 H^+

RN 12263-60-4 HCAPLUS
CN Molybdate(6-), hexatriaconta-μ-oxooctadecaoxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':κO'':.kapp
a.O''':κO''']]octadeca-, hexaammonium (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 122795-31-7 HCAPLUS
CN Vanadate(5-), (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa
.O':κO':κO'':κO'':κO'':κO''':κO''':.ka
ppa.O''']]di-, pentapotassium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



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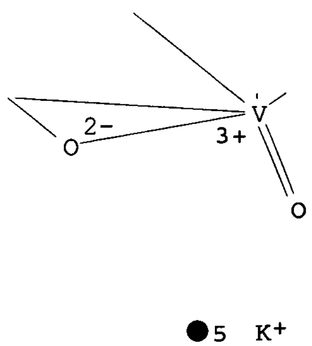


RN 152514-03-9 HCAPLUS
CN Molybdate(6-), hexatriaconta-μ-oxooctadecaoxobis[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':κO'':.kappa.O''':κO''']]octadeca-, hexapotassium (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L32 ANSWER 64 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:184055 HCAPLUS
DN 124:205574
TI Dawson-structured heteropoly acid catalyst for hydroxylation of phenol by hydrogen peroxide
IN Wu, Tonghao; Yu, Jiangeng; Wang, Guojia
PA Jilin Univ., Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 8 pp.
CODEN: CNXXEV

DT Patent
LA Chinese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1107755	A	19950906	CN 1994-120162	19941222 <--
	CN 1048654	B	20000126		
PRAI	CN 1994-120162		19941222 <--		

AB The catalyst converting phenol to hydroquinone with 100% selectivity has a **composition** AaP2MbVcOx, where A = counter charged ion; M = Mo, W; a, b, c = mol ratio of elements; a = 7-9, b = 13-18, c = 0-5, and b + c = 18; and x = pos. integer and is prepared by azeotropic ethanol extraction and converting to an acid salt under acidic conditions. H8P2Mo16V2O62 was prepared and treated with brominated alkylpyridine to give a salt, which was used for hydroxylation of phenol with hydrogen peroxide, producing hydroquinone with 100% selectivity and 10.1% conversion.

IC ICM B01J027-18
ICS B01J027-188
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67
IT **119064-84-5D**, brominated alkylpyridine salt
RL: **CAT (Catalyst use)**; USES (Uses)
(Dawson-structured **heteropolyacid** catalyst for hydroxylation of phenol by hydrogen peroxide)
IT **119064-84-5D**, brominated alkylpyridine salt
RL: **CAT (Catalyst use)**; USES (Uses)
(Dawson-structured **heteropolyacid** catalyst for hydroxylation of phenol by hydrogen peroxide)
RN 119064-84-5 HCAPLUS
CN Vanadate(8-), [nonacosa-μ-oxohexadecaoxo[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':κO'':.kapp a.O''':κO''']]hexadecamolybdate]hepta-μ-oxodioxo[μ9-[phosphato(3-)-κO:κO:κO:κO':κO':κO'':.kappa.O'':κO''':κO''']]di-, octahydrogen (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L32 ANSWER 65 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:753646 HCAPLUS
DN 123:148672
TI Heteropoly compounds and use in aromatic alkylation
IN Soled, Stuart L.; Da Costa Paes, Jose Augusto; Gutierrez, Antonio; Miseo, Sabato; Gates, William Ellis; Riley, Kenneth L.
PA Exxon Research and Engineering Co., USA
SO PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9513869	A1	19950526	WO 1994-US13326	19941118 <--
	W: CA, JP				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 5866739	A	19990202	US 1997-902047	19970729 <--
PRAI	US 1993-156178	A	19931119 <--		
	US 1994-336364	A	19941108 <--		
	US 1995-488665	B1	19950608 <--		

AB The present invention relates to a catalyst **composition**, its methods

of preparation and its use in aromatic alkylation processes. The **composition** comprises a heteropoly compound selected from the group consisting of heteropoly salts and heteropolyacid salts deposited in the interior of a porous support selected from the group consisting of silica, titania, and zirconia, wherein said salt of said heteropoly salt and said heteropolyacid salt is selected from the group consisting of ammonium, cesium, potassium, and rubidium salts and mixts. thereof, and wherein said heteropoly salt and said heteropolyacid salt are formed with a heteropolyacid selected from the group consisting of 12-tungstophosphoric, 12-tungstosilicic, 12-molybdophosphoric, and 12-molybdosilicic acid.

IC ICM B01J027-19
ICS B01J027-14; B01J021-16; B01J023-04; B01J023-28; C07C002-64

CC 51-4 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 67

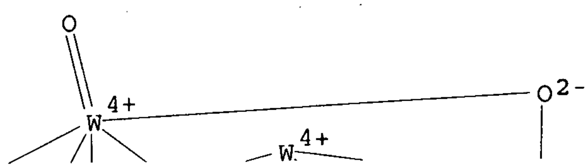
IT 534-17-8, Cesium carbonate **1343-93-7**, 12-Tungstophosphoric acid **1343-93-7D**, 12-Tungstophosphoric acid, salts with ammonium, cesium, potassium, or rubidium 7440-09-7D, Potassium, heteropolyacid salts 7440-17-7D, Rubidium, heteropolyacid salts 7440-46-2D, Cesium, heteropolyacid salts **12026-57-2**, 12-Molybdo phosphoric acid **12026-57-2D**, 12-Molybdo phosphoric acid, salts with ammonium, cesium, potassium, or rubidium **12027-12-2**, 12-Molybdo silicic acid **12027-12-2D**, 12-Molybdo silicic acid, salts with ammonium, cesium, potassium, or rubidium **12027-38-2**, 12-Tungsto silicic acid **12027-38-2D**, 12-Tungsto silicic acid, salts with ammonium, cesium, potassium, or rubidium 14798-03-9D, Ammonium, heteropolyacid salts
RL: **CAT (Catalyst use)**; USES (Uses)
(**heteropolyacid** compds. as catalysts for aromatic alkylation)

IT **1343-93-7**, 12-Tungstophosphoric acid **1343-93-7D**, 12-Tungstophosphoric acid, salts with ammonium, cesium, potassium, or rubidium **12026-57-2**, 12-Molybdo phosphoric acid **12026-57-2D**, 12-Molybdo phosphoric acid, salts with ammonium, cesium, potassium, or rubidium **12027-12-2**, 12-Molybdo silicic acid **12027-12-2D**, 12-Molybdo silicic acid, salts with ammonium, cesium, potassium, or rubidium **12027-38-2**, 12-Tungsto silicic acid **12027-38-2D**, 12-Tungsto silicic acid, salts with ammonium, cesium, potassium, or rubidium
RL: **CAT (Catalyst use)**; USES (Uses)
(**heteropolyacid** compds. as catalysts for aromatic alkylation)

RN 1343-93-7 HCAPLUS

CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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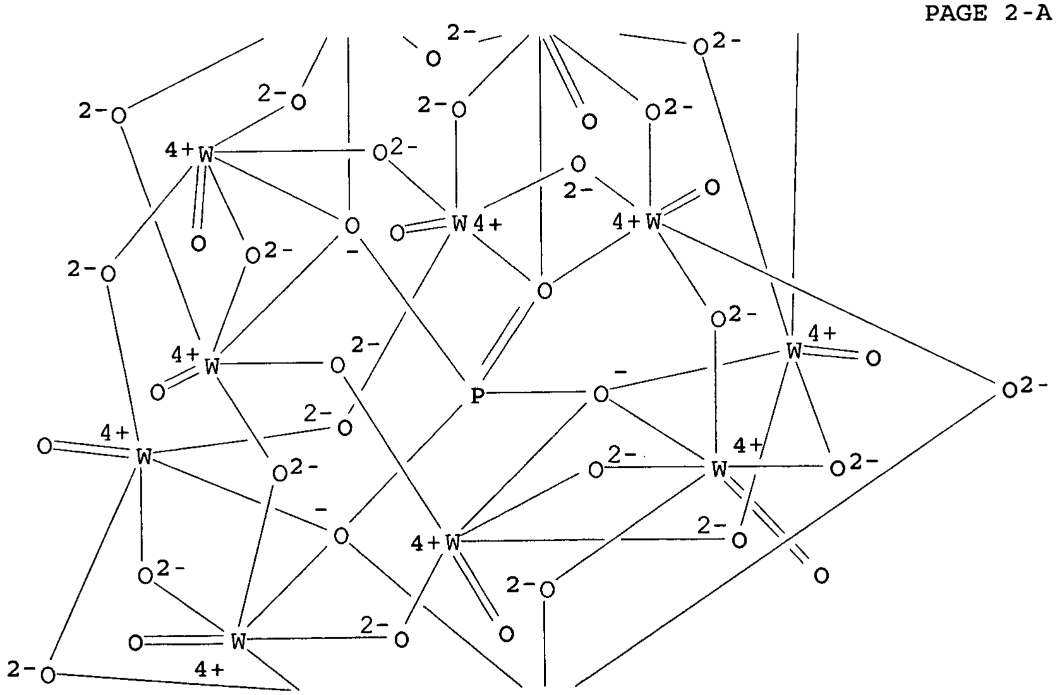

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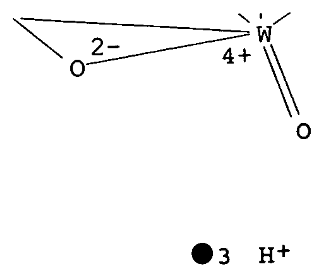
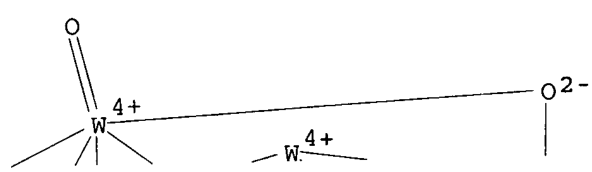


RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

PAGE 1-A



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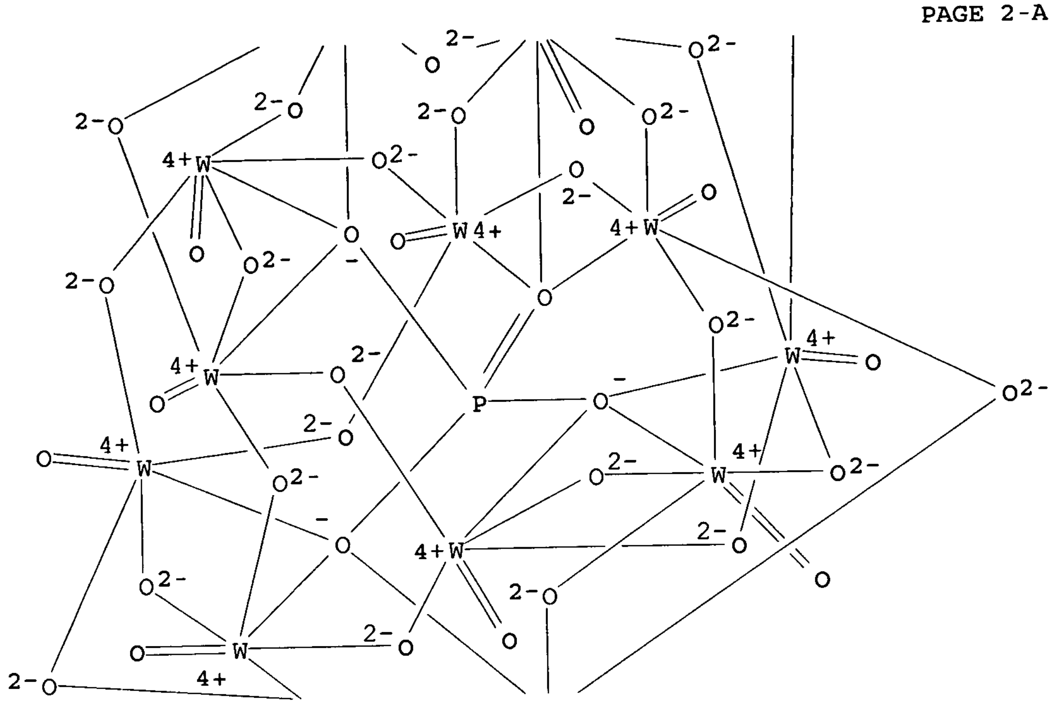

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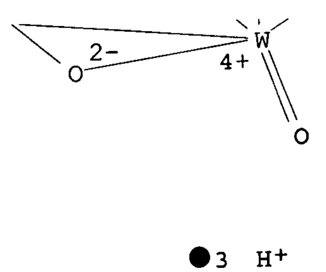
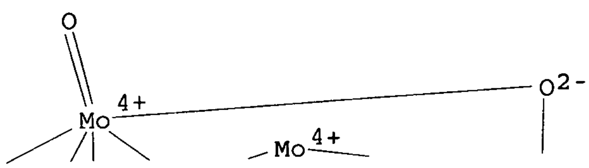


RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa
.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen
(9CI) (CA INDEX NAME)

PAGE 1-A



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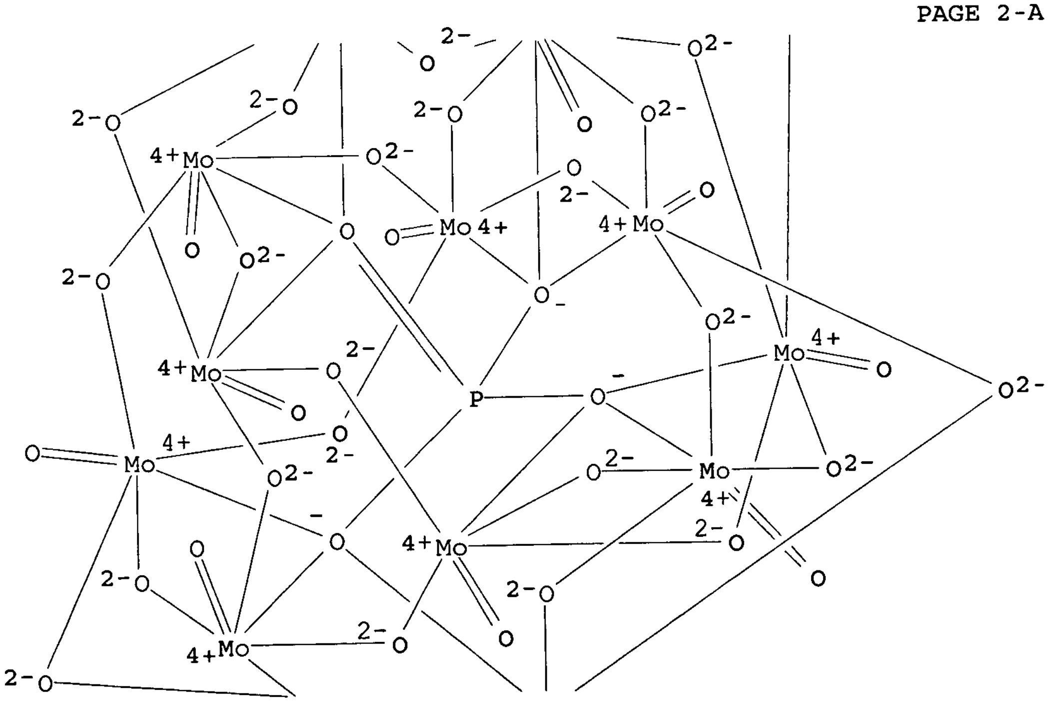

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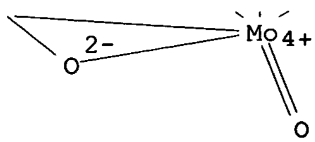

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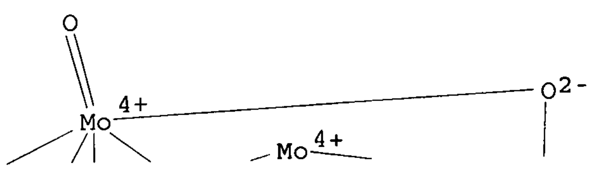
PAGE 1-A



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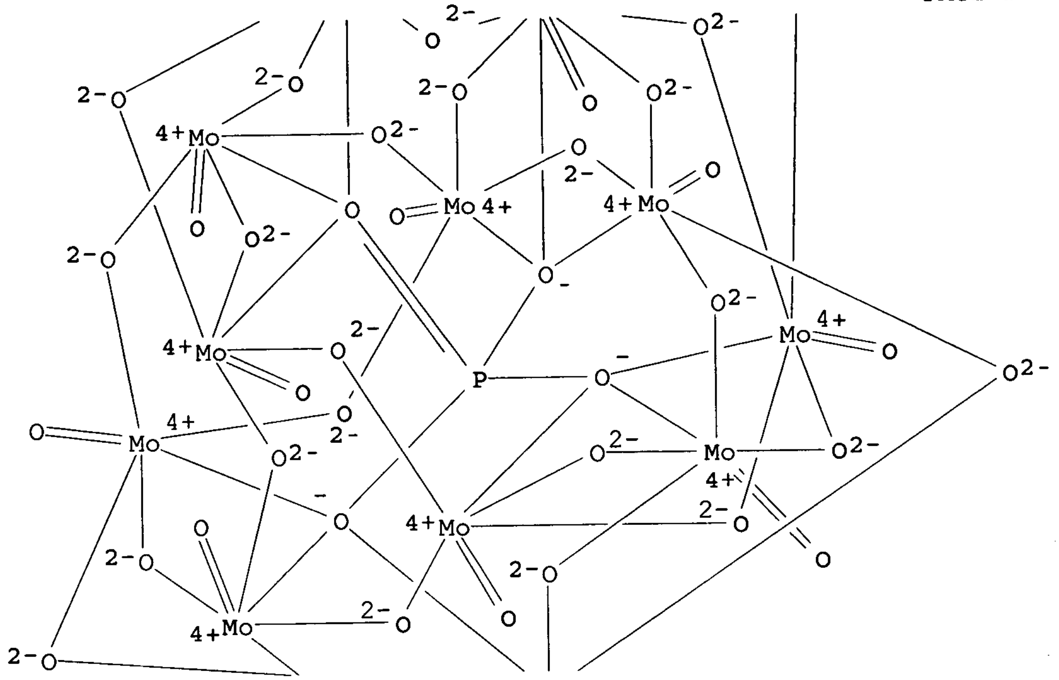

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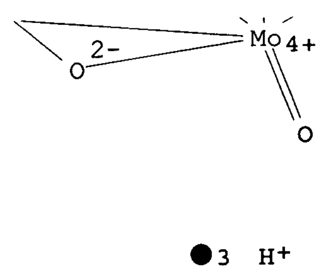

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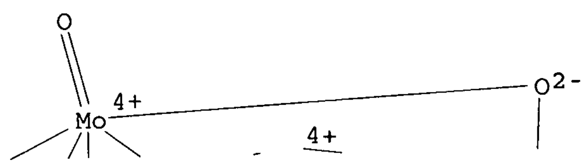

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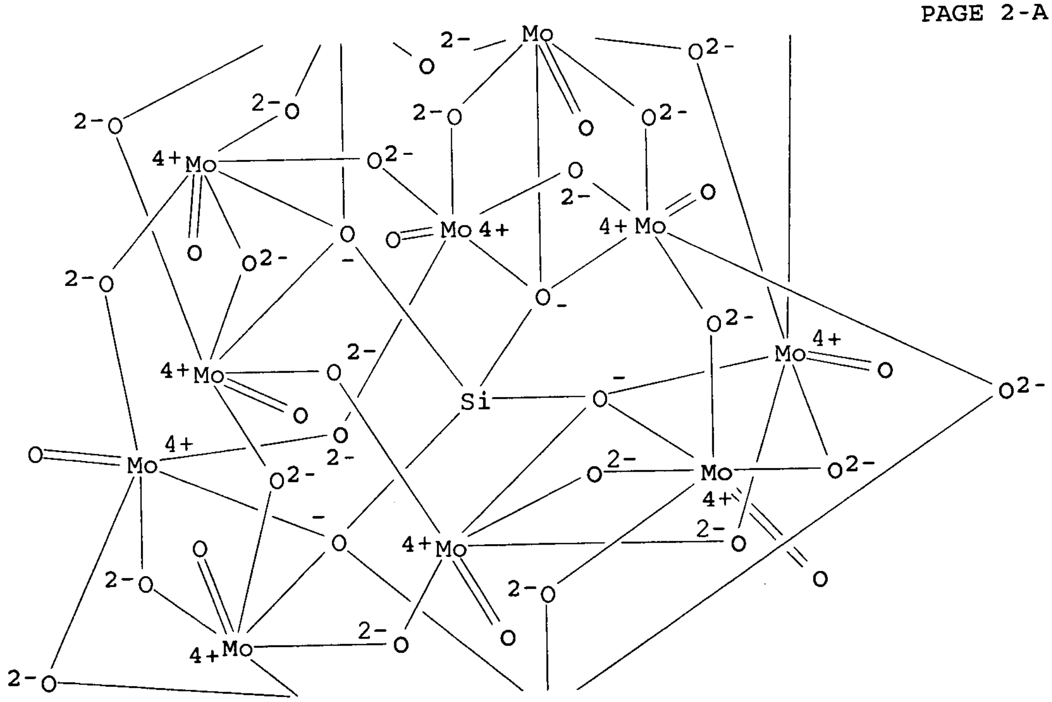

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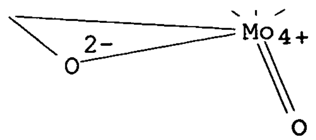

●4 H^+

RN 12027-12-2 HCAPLUS
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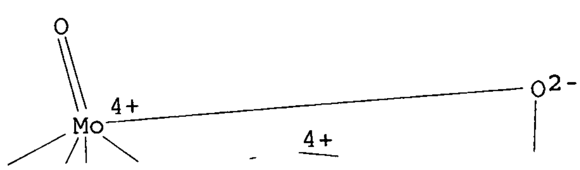
PAGE 1-A



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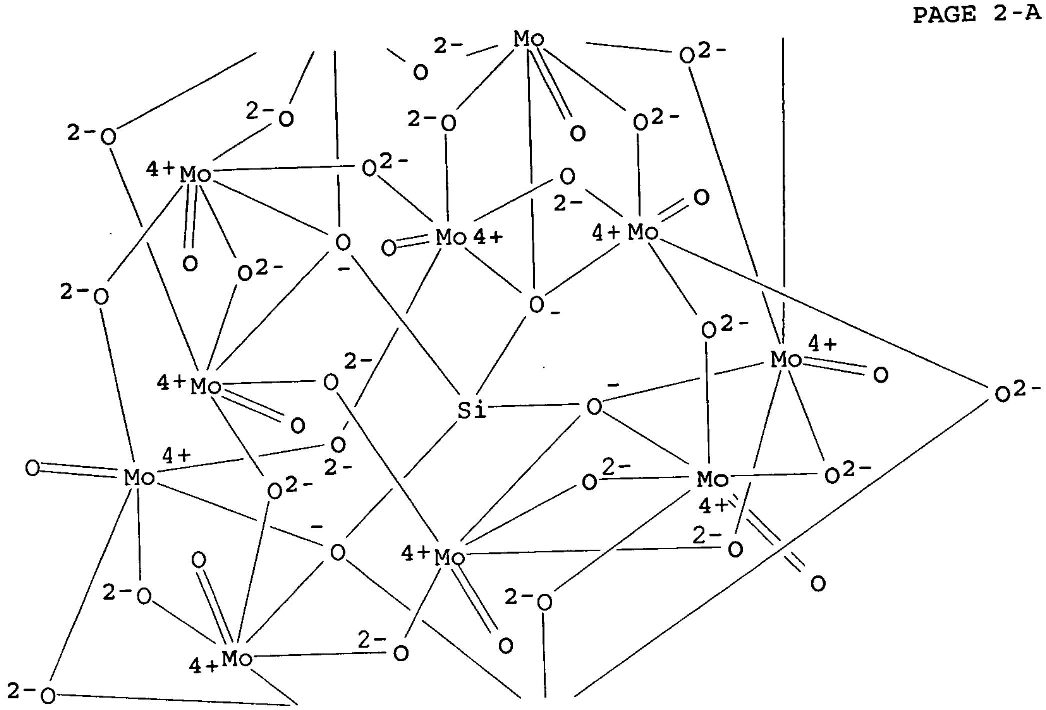

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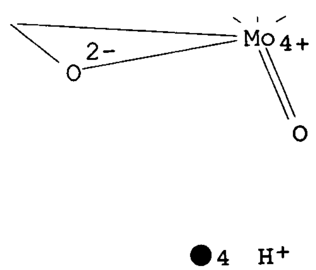
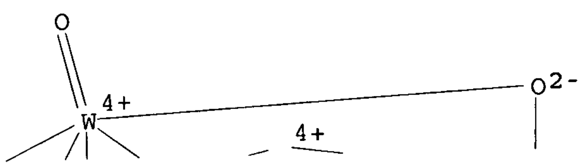
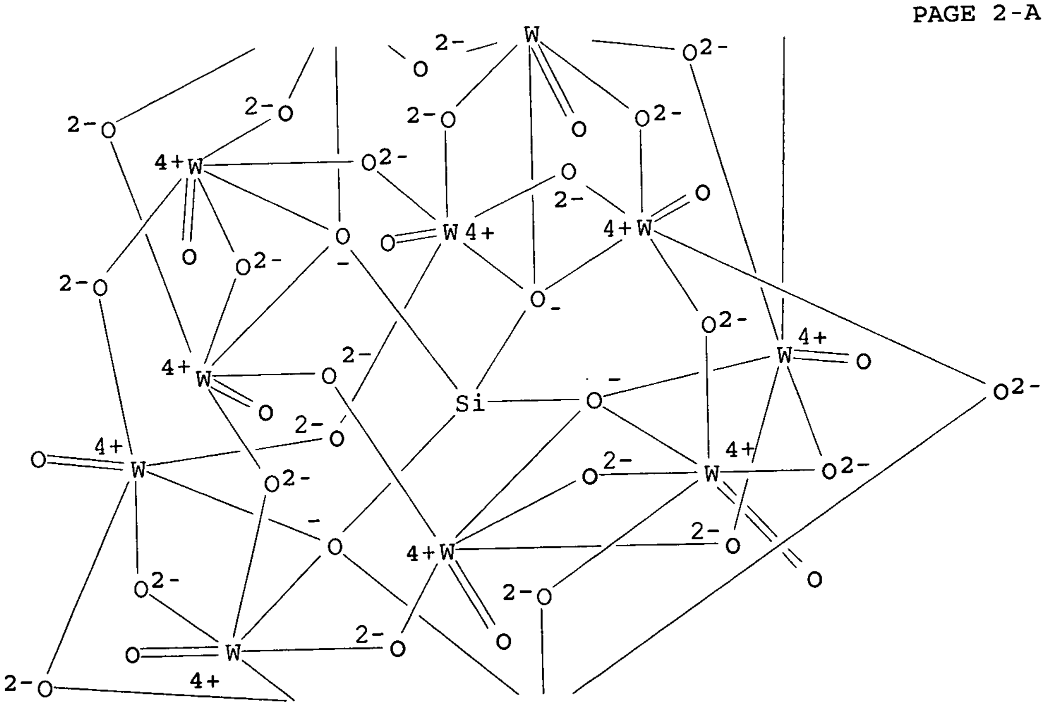


RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kappa.O':κO':κO':κO'':κO'':κO'':κO''':.kappa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

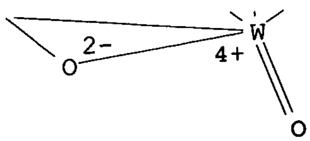
PAGE 1-A

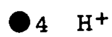


PAGE 2-A



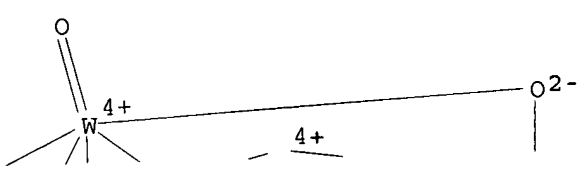
PAGE 3-A



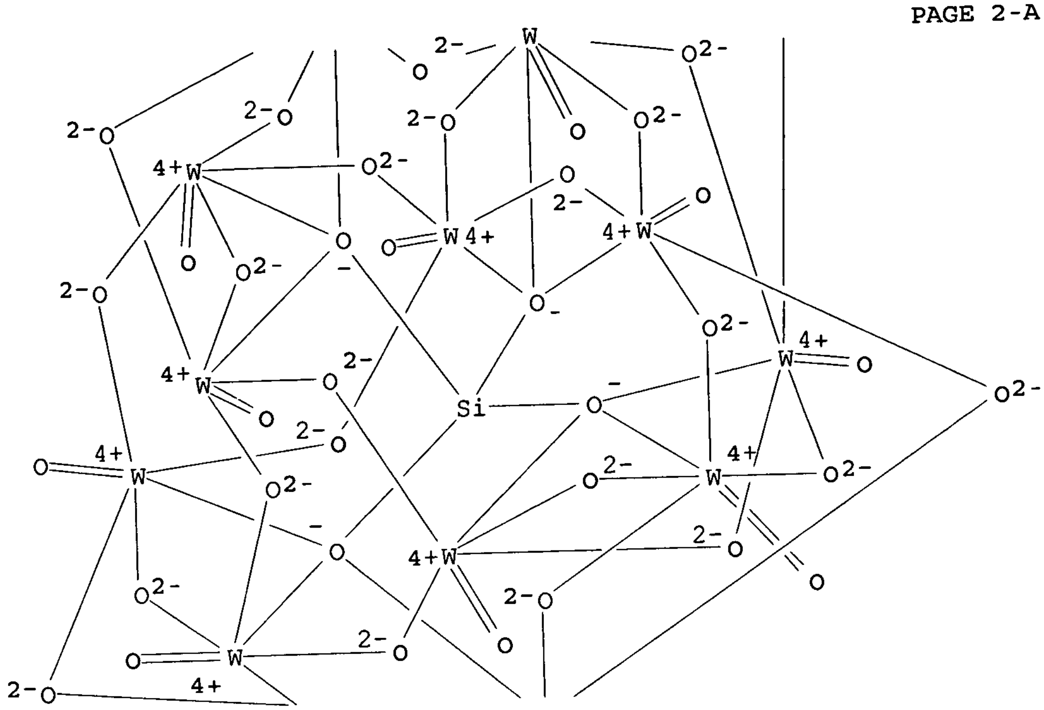


RN 12027-38-2 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen
(9CI) (CA INDEX NAME)

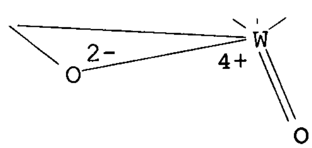
PAGE 1-A



PAGE 2-A



PAGE 3-A

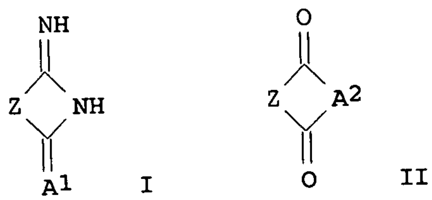


● 4 H^+

L32 ANSWER 66 OF 70 HCAPLUS
AN 1995:735393 HCAPLUS
DN 123:169502
TI Preparation of imino compound by imination of dicarboxylic acid anhydride or imide
IN Komya, Kyosuke; Konishi, Kazuhiro
PA Asahi Chemical Ind, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07097366	A2	19950411	JP 1993-264068	19930929 <--
PRAI	JP 1993-264068		19930929 <--		

OS CASREACT 123:169502; MARPAT 123:169502
GI



AB The title compds. (I; A1 = O, NH; Z = aromatic or heterocyclic group which can form an conjugated system with C:NH group), which are useful as intermediates for pigments and as heat-sensitive coloring agents, are prepared by reacting a dicarboxylic acid anhydride or imide (II; A2 = O, NH; Z = same as above) with NH3 or urea in the presence of a Mo-based heteropoly acid. This process is simple, does not use reagents difficult to handle (e.g. PCl5), and gives imino compds. in high yields. Thus, phthalic anhydride 1.48, urea 7.5, 12-molybdosilicic acid 30-hydrate (Mo 0.09 mg equiv) 0.018, PhNO2 20.0, and NH4NO2 1.62 g were placed in a flask and heated at 170° for 2 h to give phthalimide 1.9, 3-iminoisoindolin-1-one 41.5, 1,3-diiminoisoindoline 55.6, and other unknown components 1.0%. The total product yield was 97.1% and the conversion of phthalic anhydride was 100%.

IC ICM C07D209-50
ICS B01J023-28; B01J027-19; C07D209-44; C07D209-58; C07D209-62; C07D209-68; C07D471-04; C07D487-04; C07D495-04; C07D498-04; C07D513-04

ICA C07B061-00

ICI C07D487-04, C07D207-00, C07D241-00

CC 27-11 (Heterocyclic Compounds (One Hetero Atom))

IT 11098-84-3, Ammonium molybdate **12027-12-2**, 12-Molybdosilicic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(preparation of imino compound by imination of dicarboxylic acid anhydride or imide with ammonia or urea in presence of molybdenum-based **heteropoly** acid)

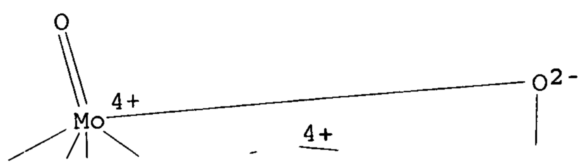
IT 57-13-6, Urea, reactions 85-44-9, Phthalic anhydride 117-08-8, Tetrachlorophthalic anhydride 6484-52-2, Ammonium **nitrate**, reactions 115953-80-5, 4-Sulfophthalimide
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of imino compound by imination of dicarboxylic acid anhydride or imide with ammonia or urea in presence of molybdenum-based heteropoly acid)

IT **12027-12-2**, 12-Molybdosilicic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(preparation of imino compound by imination of dicarboxylic acid anhydride or imide with ammonia or urea in presence of molybdenum-based **heteropoly** acid)

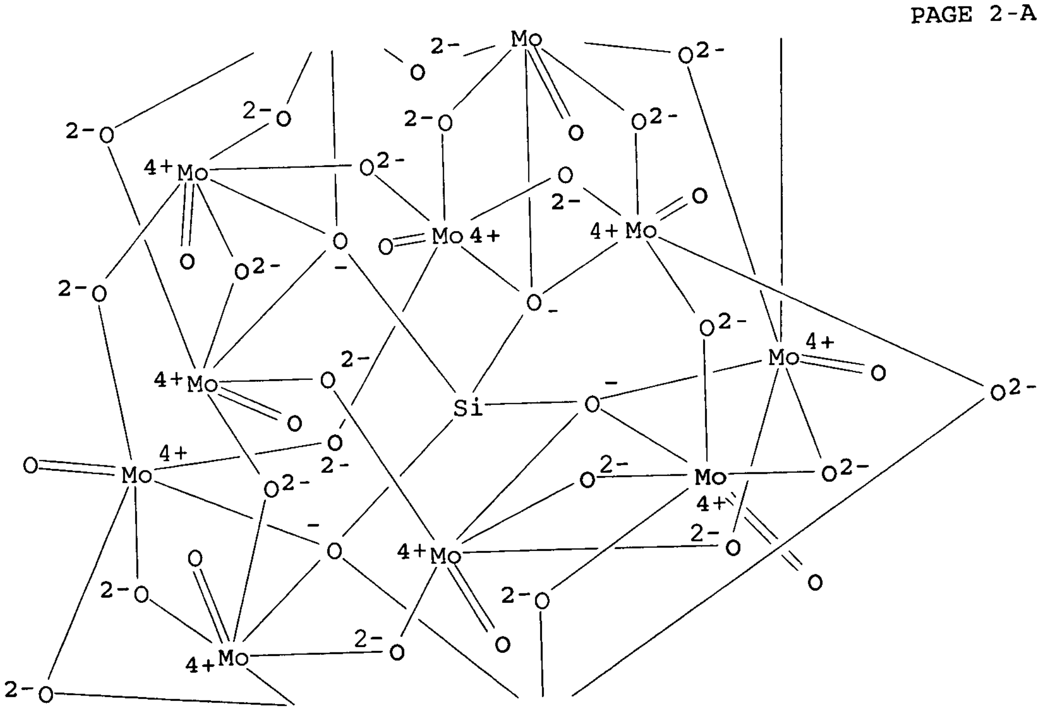
RN 12027-12-2 HCAPLUS

CN Molybdate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kappa.O':κO':κO':κO'':κO'':κO'':κO''':.kappa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetrahydrogen (9CI) (CA INDEX NAME)

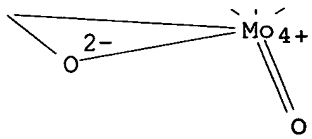
PAGE 1-A

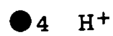


PAGE 2-A



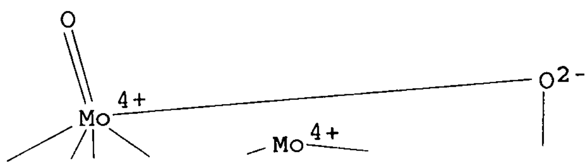
PAGE 3-A



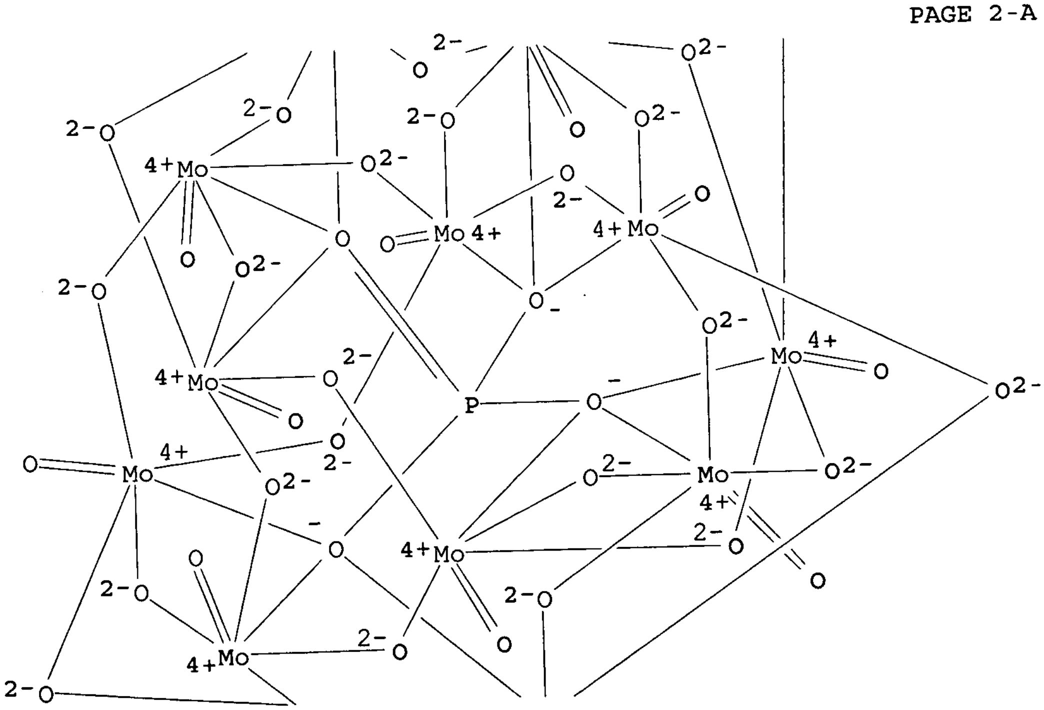


L32 ANSWER 67 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:281516 HCAPLUS
DN 122:115871
TI A comparative study of the microporosity of the ammonium and cesium salts of 12-tungstophosphoric, 12-molybdophosphoric, and 12-tungstosilicic acids by xenon-129 NMR
AU Bonardet, J. L.; Fraissard, J.; McGarvey, G. B.; Moffat, J. B.
CS Lab. Chim. Surfaces, Univ. Pierre et Marie Curie, Paris, Fr.
SO Journal of Catalysis (1995), 151(1), 147-54
CODEN: JCTLA5; ISSN: 0021-9517
PB Academic
DT Journal
LA English
AB The Xe129 NMR method was applied to the ammonium and Cs salts of 12-tungstophosphoric, 12-molybdophosphoric, and 12-tungstosilicic acids, as well as to K 12-tungstophosphate. The exptl. data provide evidence for the presence of a homogeneous and organized pore structure. The ammonium salts produce similar pore openings of 9.0 Å (regardless of the **composition** of the anion) while those for the Cs salts depends on the nature of the anion.
CC 66-3 (Surface Chemistry and Colloids)
Section cross-reference(s): 67, 77
IT **12026-64-1**, Cesium molybdophosphate (Cs3PMo12O40)
12026-66-3, Ammonium molybdophosphate ((NH4)3PMo12O40)
12026-91-4, Cesium tungstophosphate (Cs3PW12O40)
12026-93-6, Ammonium tungstophosphate ((NH4)3PW12O40)
12027-42-8, Cesium tungstosilicate (Cs4SiW12O40)
12207-66-8, Potassium tungstophosphate (K3PW12O40)
77981-80-7, Ammonium tungstosilicate ((NH4)4SiW12O40)
RL: **CAT (Catalyst use)**; PRP (Properties); USES (Uses)
(Xe129 NMR study of microporosity in ammonium and cesium **heteropoly** salts)
IT **12026-64-1**, Cesium molybdophosphate (Cs3PMo12O40)
12026-66-3, Ammonium molybdophosphate ((NH4)3PMo12O40)
12026-91-4, Cesium tungstophosphate (Cs3PW12O40)
12026-93-6, Ammonium tungstophosphate ((NH4)3PW12O40)
12027-42-8, Cesium tungstosilicate (Cs4SiW12O40)
12207-66-8, Potassium tungstophosphate (K3PW12O40)
77981-80-7, Ammonium tungstosilicate ((NH4)4SiW12O40)
RL: **CAT (Catalyst use)**; PRP (Properties); USES (Uses)
(Xe129 NMR study of microporosity in ammonium and cesium **heteropoly** salts)
RN 12026-64-1 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-O:O:O:O':O':O':O'':O'':O'':O''':O''':O''']]dodeca-, tricesium (9CI) (CA INDEX NAME)

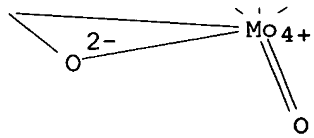
PAGE 1-A



PAGE 2-A



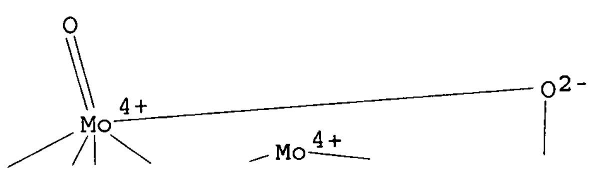
PAGE 3-A



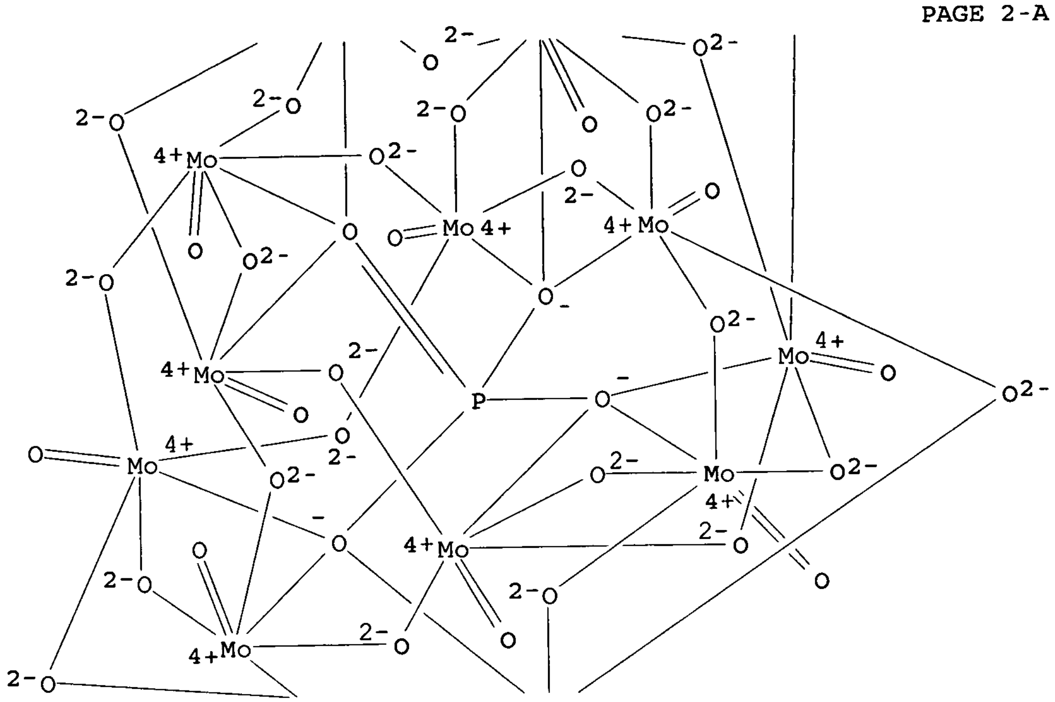
●3 Cs^+

RN 12026-66-3 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, triammonium (9CI) (CA INDEX NAME)

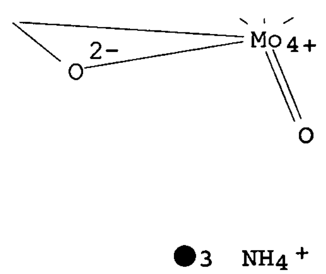
PAGE 1-A



PAGE 2-A

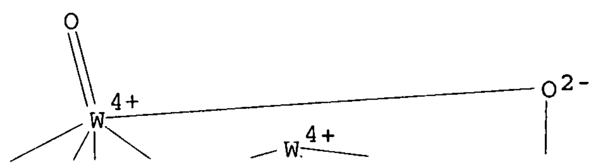


PAGE 3-A

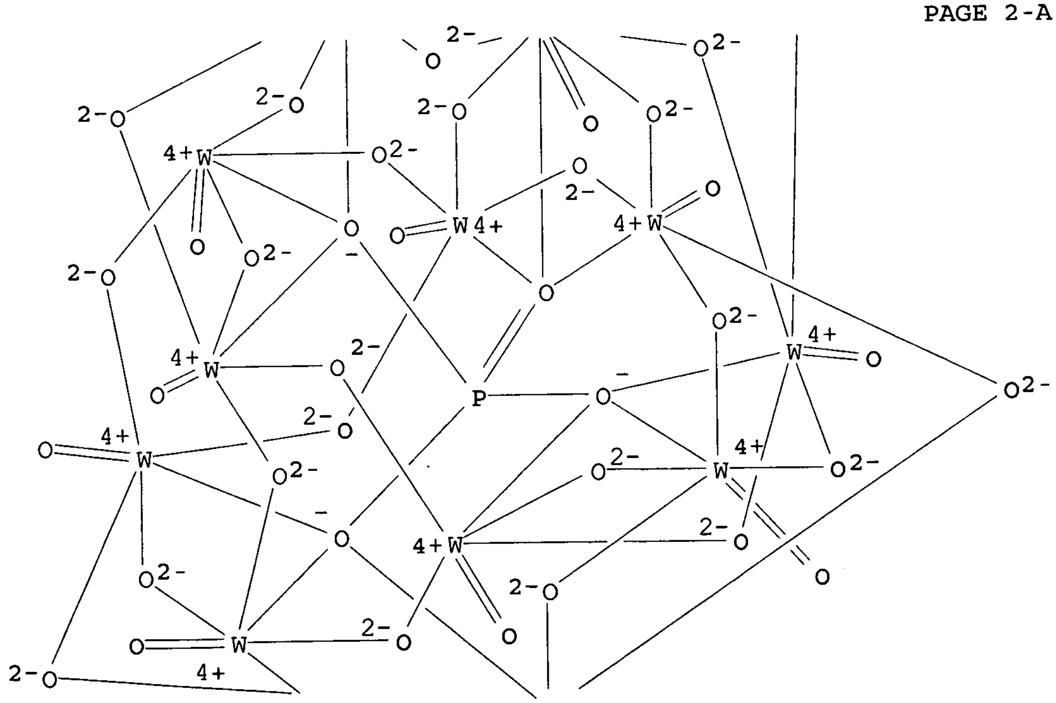


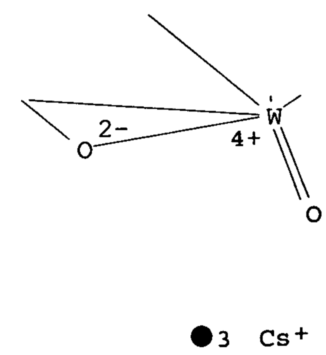
RN 12026-91-4 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, tricesium (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A

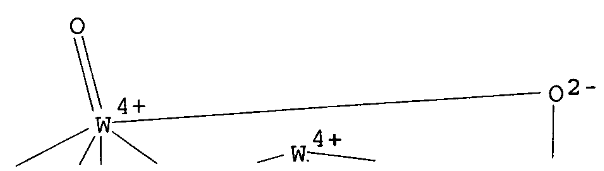




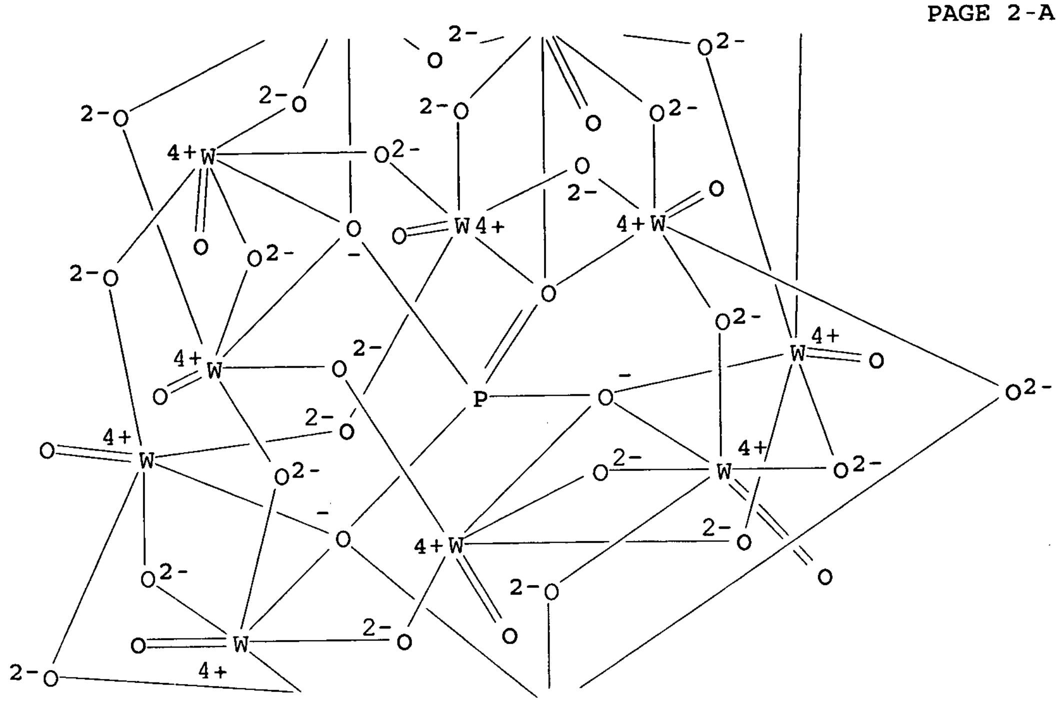
PAGE 3-A

RN 12026-93-6 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, triammonium (9CI) (CA INDEX NAME)

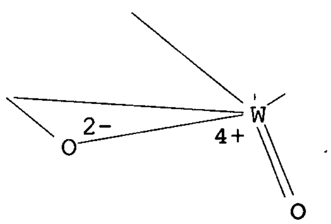
PAGE 1-A



PAGE 2-A



PAGE 3-A



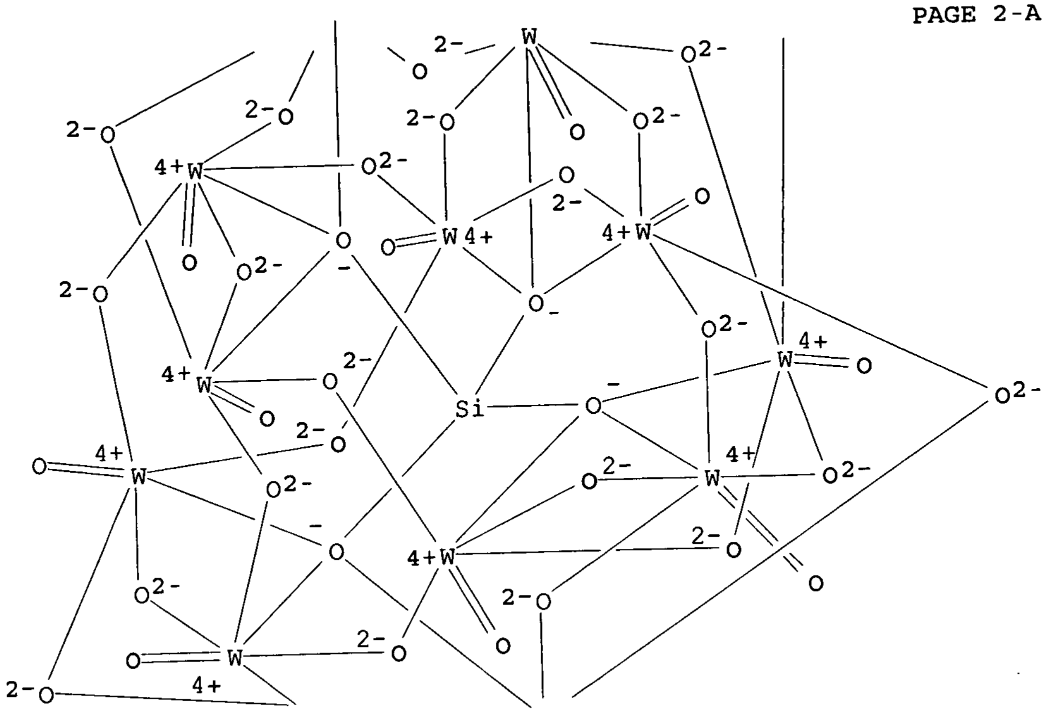
●3 NH_4^+

RN 12027-42-8 HCAPLUS

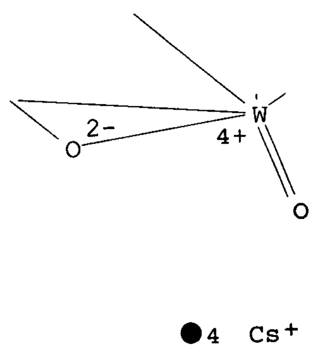
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp a.O':κO':κO':κO'':κO'':κO'':κO''':.kap pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetracesium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A

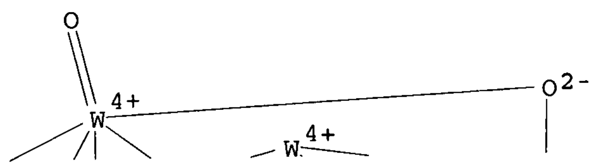


PAGE 3-A

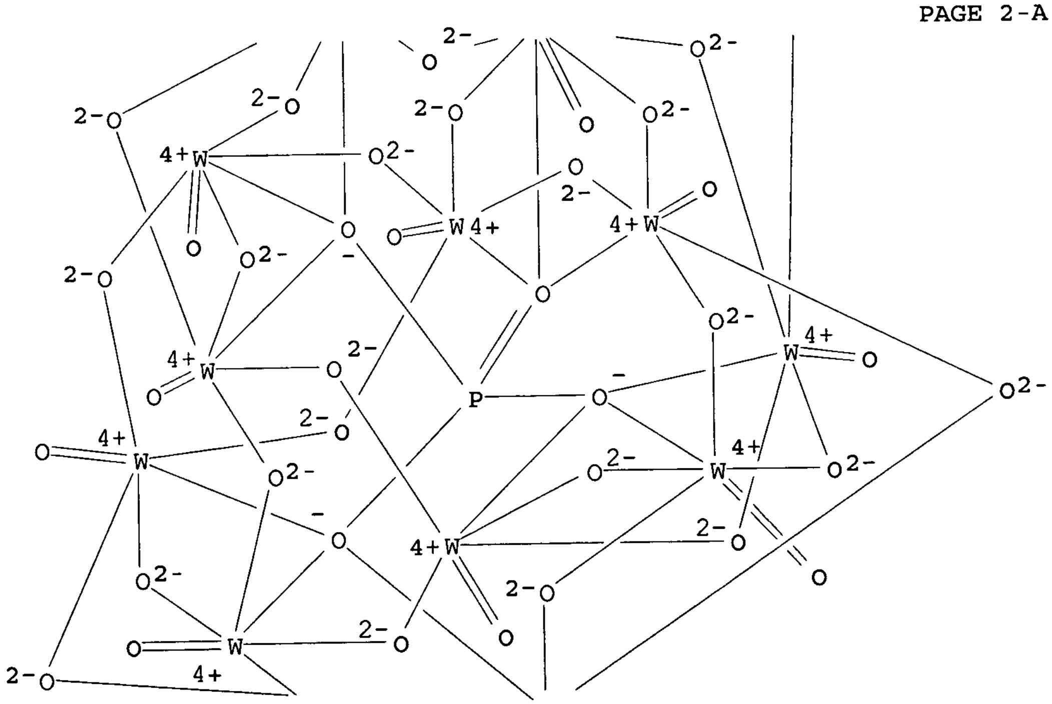


RN 12207-66-8 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, tripotassium (9CI) (CA INDEX NAME)

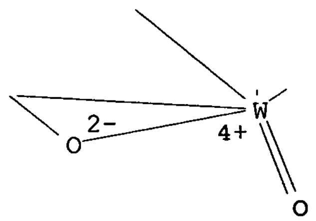
PAGE 1-A



PAGE 2-A



PAGE 3-A

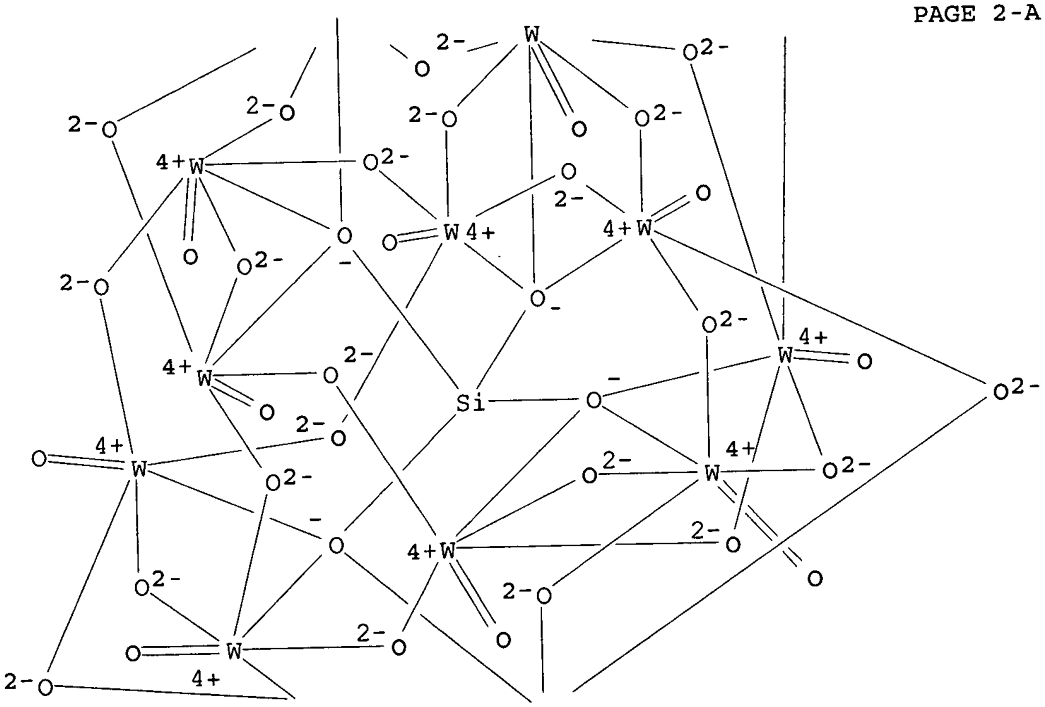


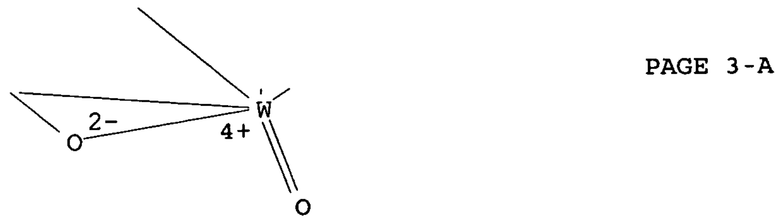
●3 K+

RN 77981-80-7 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetraammonium
(9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A





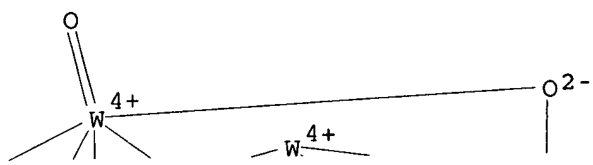
●4 NH_4^+

L32 ANSWER 68 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:278429 HCAPLUS
DN 122:110416
TI Supported heteropoly acid catalysts
IN Kresge, Charles T.; Marler, David O.; Rav, Gayatri S.; Rose, Brenda H.
PA Mobil Oil Corp., USA
SO U.S., 14 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

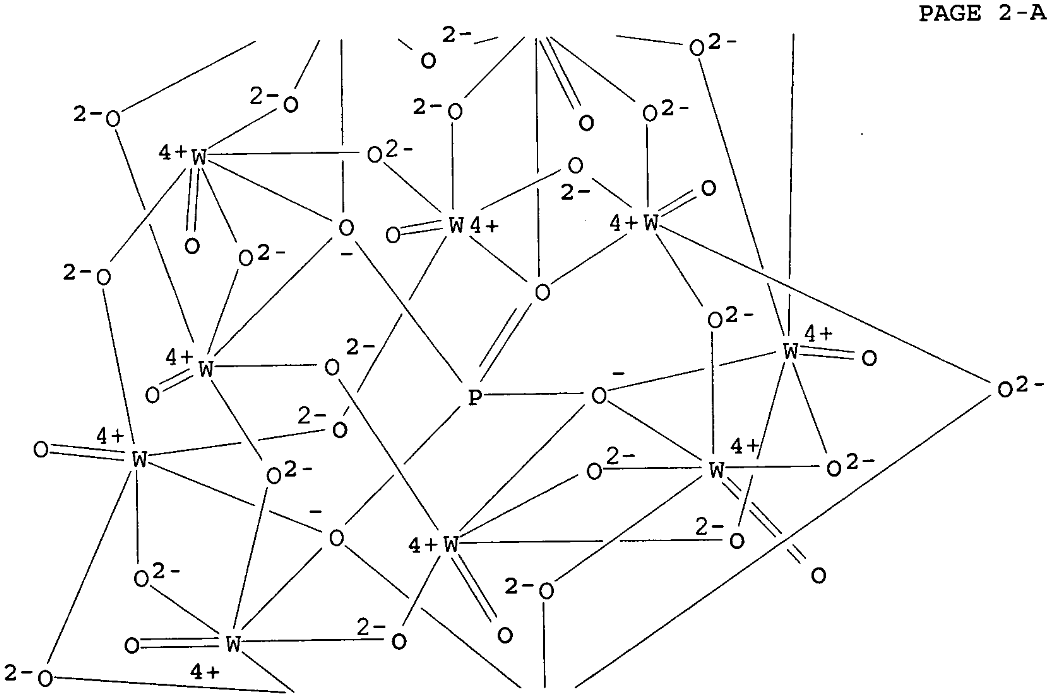
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5366945	A	19941122	US 1992-995091	19921222 <--
	US 5324881	A	19940628	US 1993-46041	19930412 <--
	US 5475178	A	19951212	US 1994-292653	19940818 <--
PRAI	US 1992-995091	A2	19921222 <--		

AB There is provided a catalyst comprising a heteropoly acid, such as phosphotungstic acid, supported on a mesoporous crystalline material, such as M41S. A particular form of this M41S support is designated as MCM-41. There is also provided a method for preparing this catalyst by impregnating the heteropoly acid on the support. There is also provided a process for using this catalyst to catalyze acid catalyzed reactions, such as the isomerization of paraffins and the alkylation of aroms.
IC ICM B01J029-04
ICS B01J029-06; B01J027-185; B01J021-02
INCL 502060000
CC 51-4 (Fossil Fuels, Derivatives, and Related Products)
IT 505-86-2, Cetyltrimethylammonium hydroxide **1343-93-7**, Phosphotungstic acid 6484-52-2, Ammonium **nitrate**, uses 7440-06-4, Platinum, uses 7631-86-9, Silica, uses 7631-86-9D, Silica, alumina-free 134581-61-6
RL: **CAT (Catalyst use)**; USES (Uses)
(**heteropoly** acid catalysts supported on mesoporous crystalline materials for paraffin isomerization and aroms. alkylation)
IT **1343-93-7**, Phosphotungstic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(**heteropoly** acid catalysts supported on mesoporous crystalline materials for paraffin isomerization and aroms. alkylation)
RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

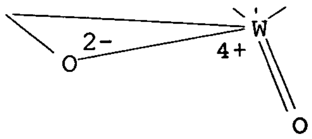
PAGE 1-A



PAGE 2-A



PAGE 3-A



● 3 H^+

L32 ANSWER 69 OF 70 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:92922 HCAPLUS
DN 122:9299
TI Role of water in polyoxometalate-catalyzed oxidations in nonaqueous media. Scope, kinetics, and mechanism of oxidation of thioether mustard (HD) analogs by tert-butyl hydroperoxide catalyzed by H5PV2Mo10O40
AU Gall, Robin Damico; Faraj, Mahmoud; Hill, Craig L.
CS Department of Chemistry, Emory University, Atlanta, GA, 30322, USA
SO Inorganic Chemistry (**1994**), 33(22), 5015-21
CODEN: INOCAJ; ISSN: 0020-1669
DT Journal
LA English
OS CASREACT 122:9299
AB A range of heteropolyoxometalates catalyze the oxidation of thioether analogs of mustard (HD) to the corresponding sulfoxides by tert-Bu hydroperoxide (TBHP) rapidly at 25 °C, with selectivities as high as any seen in the literature for thioether oxidns. The strongly acidic complexes H3PW12O40 and H3PMo12O40 function primarily as acid catalysts for thioether oxidation by TBHP, producing sulfoxide with 98-99% selectivities (1-3% sulfone present) at modest conversions. Three lines of evidence involving the model compound, tetrahydrothiophene (THT), indicate that several vanadium-substituted heteropoly acids, including hydrated H5PV2Mo10O40 (1), are significantly more selective (>99.9%): (1) No sulfone (THTO2) is detectable at the limits (1 part in 105) of gas chromatog. and gas chromatog.-mass spectrometric analyses, (2) THTO and THTOH+ are both stable under the reaction conditions, and (3) (THTOH)4(H)(PV2Mo10O40) or (THTOH)4(H)(PV2Mo10O40)(THTO)2 (2), identified by NMR, IR, UV-visible, and elemental anal., is stable for a period of at least 1 mo under the conditions of the title catalytic reactions (homogeneous acetonitrile, 25 °C). The rates of thioether oxidation to sulfoxide catalyzed by 1, based on six aliphatic and aromatic thioethers, vary over a factor of more than 103 and do not correlate well with the thioether redox potentials. The data, including rates and selectivities of the reaction with and without TBHP, establish that these reactions proceed by initial thioether oxidation and polyoxometalate reduction followed by reduced polyoxometalate reoxidn. by TBHP. This mechanism is in sharp contrast to the conventional mechanisms for metal complex mediated peroxide oxidns. (electrophilic peroxide activation by the metal complex or radical processes). Two important and heretofore undocumented roles of H2O are consistent with the rate studies of THT oxidation by 1 in the absence of TBHP. First, the reaction is strongly inhibited by water and the rate law is v0 = k[THT][1][H2O]-1. In the absence of water, the rate becomes independent of THT substrate (v0 = k'[1]) and dehydration of the polyoxometalate may be rate limiting. All the data, including the activation parameters (ΔH.thermod. = 8.06 ± 0.64 kcal mol-1 and

ΔS.thermod. = -29.7 ± 0.18 eu), are most consistent with outer sphere electron transfer for the key thioether oxidation step in the mechanism.

CC 22-7 (Physical Organic Chemistry)
Section cross-reference(s): **4**

IT 104-15-4, p-Toluenesulfonic acid, uses **1343-93-7**, Tungstophosphoric acid (H3W12PO40) 7732-18-5, Water, uses **12026-57-2**, Molybdophosphoric acid (H3Mo12PO40) **12786-62-8** 13568-40-6 32503-27-8, Tetrabutylammonium hydrosulfate 58071-93-5D, hydrogen tetrabutylammonium salts
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(role of water and scope, kinetics, and mechanism of oxidation of thioether mustard (HD) analogs by tert-Bu hydroperoxide catalyzed by **polyoxometalates** in nonaq. media)

IT **12293-21-9**, Molybdovanadophosphoric acid (H5Mo10V2PO40)
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(IR and role of water and scope, kinetics, and mechanism of oxidation of thioether mustard (HD) analogs by tert-Bu hydroperoxide catalyzed by **polyoxometalates** in nonaq. media)

IT **1343-93-7**, Tungstophosphoric acid (H3W12PO40) **12026-57-2**, Molybdophosphoric acid (H3Mo12PO40) **12786-62-8**
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(role of water and scope, kinetics, and mechanism of oxidation of thioether mustard (HD) analogs by tert-Bu hydroperoxide catalyzed by **polyoxometalates** in nonaq. media)

RN 1343-93-7 HCAPLUS
CN Tungstate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

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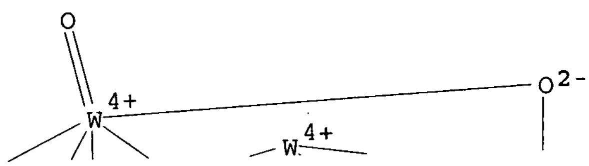

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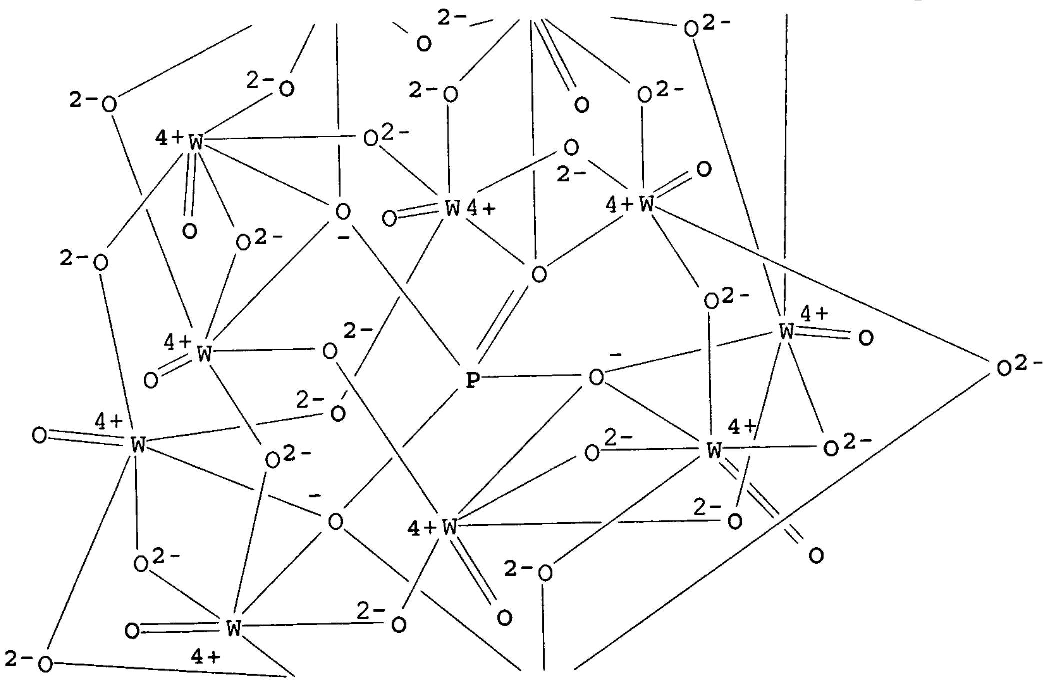

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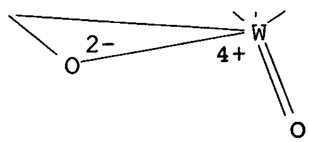

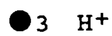

RN 12026-57-2 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]dodeca-, trihydrogen (9CI) (CA INDEX NAME)

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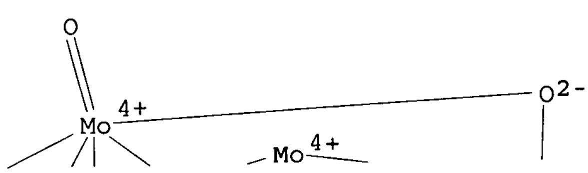

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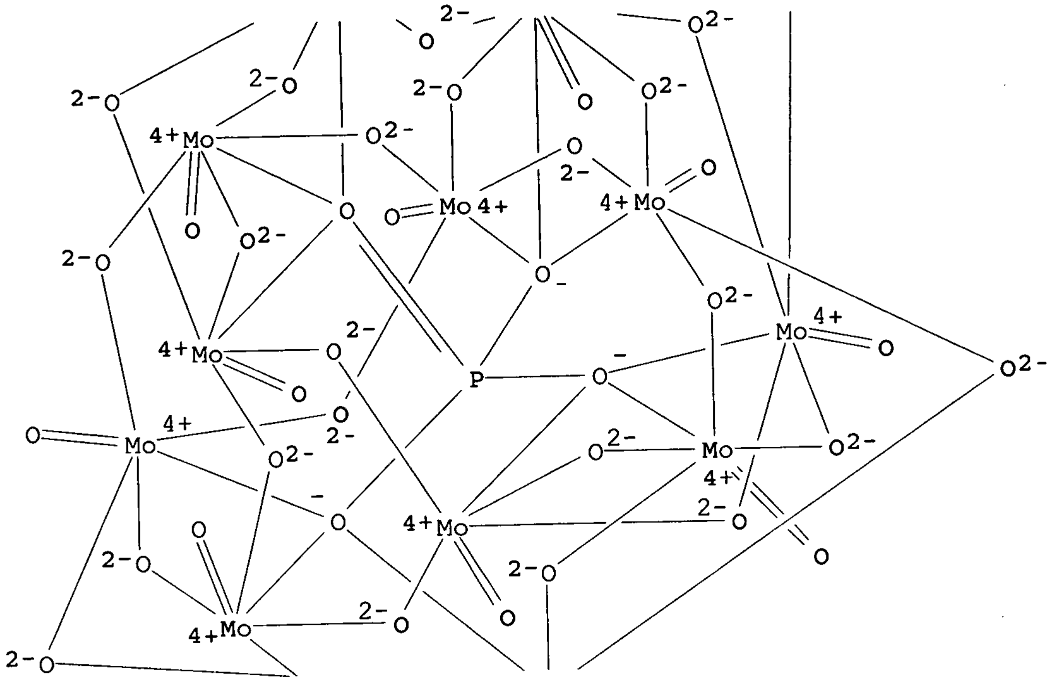

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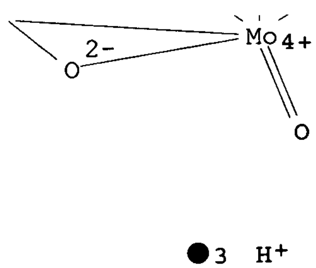

RN 12786-62-8 HCAPLUS
CN Vanadate(6-), nona-μ-oxotrioxo(pentadeca-μ-oxononaoxononatungstate)[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa.O'':κO'':κO''':κO''':κO''']]tri-, hexahydrogen (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

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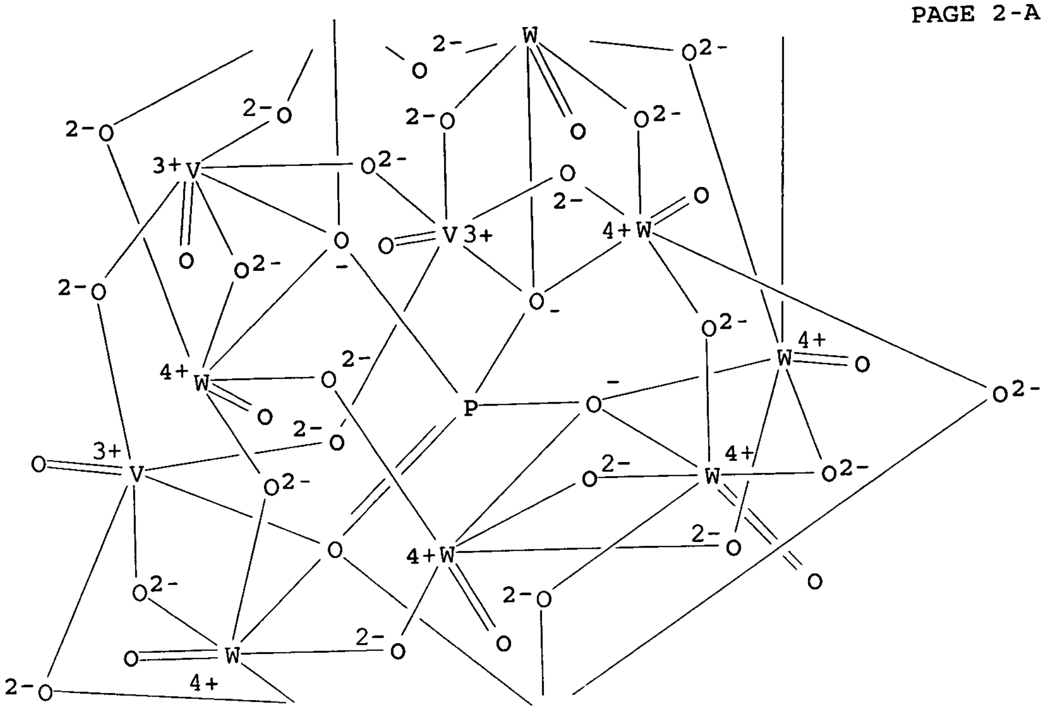

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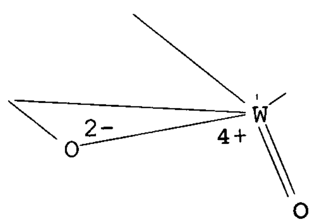

●6 H^+

IT 12293-21-9, Molybdovanadophosphoric acid (H5Mo10V2PO40)
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(IR and role of water and scope, kinetics, and mechanism of oxidation of thioether mustard (HD) analogs by tert-Bu hydroperoxide catalyzed by **polyoxometalates** in nonaq. media)

RN 12293-21-9 HCAPLUS

CN Vanadate(5-), (heptadeca-μ-oxodecaoxodecamolybdate)hepta-μ-oxodioxo[μ12-[phosphato(3-)-κO:κO:κO:κO':.kappa .O':κO':κO'':κO'':κO'':κO''':κO''':κO''':.ka ppa.O''']]di-, pentahydrogen (9CI) (CA INDEX NAME)

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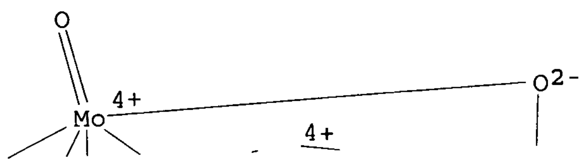

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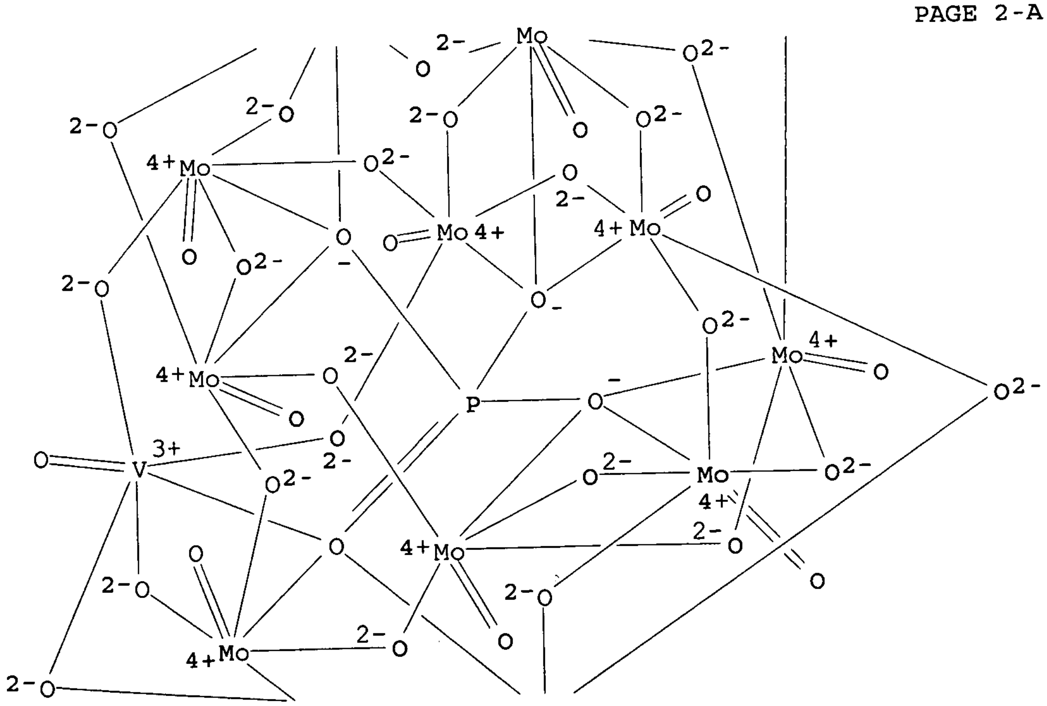

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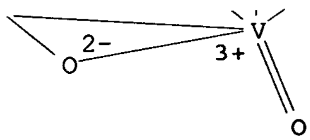

●5 H^+

L32 ANSWER 70 OF 70 HCAPLUS
AN 1991:521046 HCAPLUS
DN 115:121046
TI Acid-base properties of H3+nPVnMo12-nO40 heteropolyacids, pure and supported on potassium phosphomolybdate (K2PMo12O40)
AU Serwicka, E. M.; Bruckman, K.; Haber, J.; Paukstis, E.; Yurchenko, E. N.
CS Inst. Catal. Surg. Chem., Pol. Acad. Sci., Krakow, 30-239, Pol.
SO Applied Catalysis (**1991**), 73(2), 153-63
CODEN: APCADI; ISSN: 0166-9834
DT Journal
LA English
AB The acidity of unsupported H3+nPVnMo12-nO40.xH2O heteropolyacids is primarily affected by the degree of hydration, and to a lesser extent by the sample **composition** Thermal pretreatment reduces the number of hydrated, strongly acidic protons leaving behind protons which are devoid of the hydration shell, representing weak acid sites, only partially detectable by pyridine, their amount increasing with n. After treatment at 573 K, a shift towards weaker acid sites is observed or increasing substitution due to the growing susceptibility to dehydration. Supporting on K3PMo12O40 enhances the acidic properties by a factor of 3-4. Acid sites present in surface acid layers show a similar strength irresp. of acid **composition** The results are consistent with the previously postulated formation of an epitaxial acid coat of increased resistivity against dehydration, isostructural with the support, where the most hydrated, hence most acidic, protons exist as diaquahydrogen ions.
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
IT **12026-68-5**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts from vanadium phosphomolybdate **heteropoly** acids and, acidity of, effect of amount of vanadium substitution on)
IT **12026-68-5**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts from vanadium phosphomolybdate **heteropoly** acids and, acidity of, effect of amount of vanadium substitution on)
RN 12026-68-5 HCAPLUS
CN Molybdate(3-), tetracosa-μ-oxododecaoxo[μ12-[phosphato(3-)-κO:κO:κO:κO':κO':κO':κO'':.kappa .O'':κO'':κO''':κO''':κO''']]dodeca-, tripotassium (9CI) (CA INDEX NAME)

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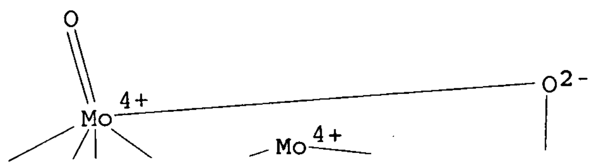

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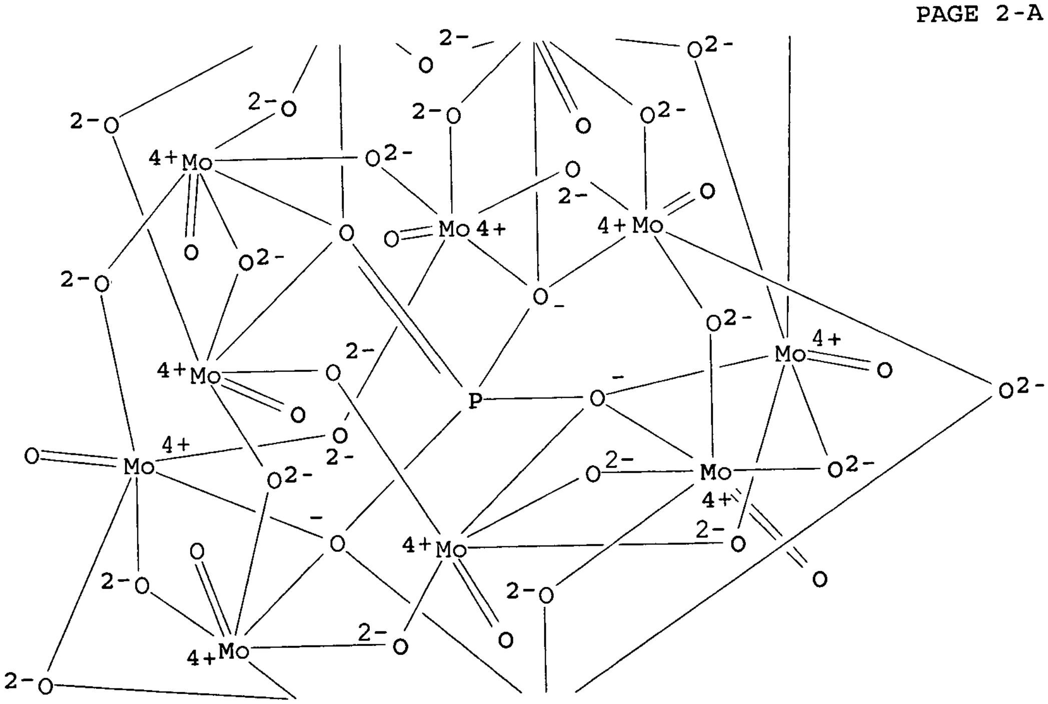

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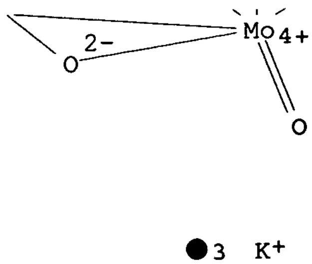

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